DOCUMENTS
MAY 2 1946
Duke University Library

Wright Explains Move Placing Overseas Air Aids With CAA

Civil Aeronautics Administrator, T. P. Wright, has estimated that nearly 200 air navigation facilities installed in 68 countries by our military forces will be kept in operation for the benefit of U. S. international air commerce, under executive order of March 29, giving the Department of Commerce authority for continuation of that activity.

In Position To Act—"We now are in a position," Mr. Wright said, "to take action on a problem that has been disturbing everyone concerned with the maintenance for civil aviation use of the U. S. constructed air navigation facilities that played such a vital role in establishing our world leadership in military aviation.

"The War and Navy Departments have been operating at points outside the United States approximately 600 radio ranges, airways communication stations and similar facilities essential to safe air navigation. As the armed forces demobilized, we were faced with the possibility that many of these installations so necessary to safe civil operations on routes flown by American flag airlines would be dismantled or abandoned.

"Anticipating this problem, the Air Coordinating Committee of the Federal Government directed a subcommittee headed by CAA Deputy Administrator Charles I. Stanton to survey all such facilities and recommend a program to preserve those necessary to civil aviation.

258 Installations Needed—"Mr. Stanton's subcommittee found that 258 of the military installations might be needed by international air service, and 66 of these would be continued by military agencies in connection with occupation or similar duties. It recommended that the Department of Commerce be empowered to make necessary arrangements for continued operation of the remaining 192.

"Under the President's order, we can proceed in several different ways, according to the local situation. Where the country in which the facility is located desires to operate it, we can arrange, through the State Department, for the transfer of that facility to the foreign nation in return for an agreement to continue its operation. Where a nation does not desire to operate such a facility, we can negotiate, again through the State Department, for its operation by (1) the CAA (2) a U. S. air carrier or other suitable U. S. private agency, or (3) by an international organization.

Payment for Services—"We are also empowered to accept funds from any foreign government or from any air carrier in payment for services rendered in the operation of these facilities. It is our intention to do this, for while we recognize the great benefits to the nation of international air service, the necessary navigation facilities should not become a permanent U. S. Government expense.

"The President's order, it should be noted, provides that facilities shall be transferred to the Department of Commerce only when they can be continued in operation with funds available to the Department. No funds for such operation are available to the Department at present, and while we expect to delegate a large part of the responsibility outside of the Federal Government, it will be impossible to execute the program without some additional appropriations."

Mr. Wright made plain that the authority given the Department of Commerce did not cover landing fields built by U. S. forces, but applied only to air navigation, air traffic control, airways communication and meteorological facilities.

At present a supplemental budget estimate has been made to provide for an interim operation by the CAA of communications and air traffic control stations.

3 Flight Information Books Combined as New Guide

Starting with the April 2 issue the "Bi-weekly Notice to Airmen" became a "triple-decker" with the "Directory of Airports," "Air Navigation Radio Aids" and "Notice to Airmen" publications combined into one book, under title of the "Airman's Guide."

This consolidates into one publication the three essentials to safe flying, and also provides pilots with "Air Navigation Radio Aids" information every two weeks. Previously this booklet was issued every two months.

Comments and recommendations regarding the trial consolidation of this material into the "Airman's Guide" will be appreciated. They should be addressed to the Office of Aviation Information, Civil Aeronautics Administration, Department of Commerce, Washington 25, D. C.

2,047 Civil Planes Produced in 1945; Eleven Family Size

A rapid spurt in the civil aircraft production rate since VJ-Day, from 10 in July to 797 in December, is shown in statistics released recently by T. P. Wright, Administrator of Civil Aeronautics.

First Peacetime Figures—Compiled by the CAA Office of Aviation Information, which has taken over the wartime production reporting functions of the Aircraft Resources Control Office, these first official peacetime production statistics show a total 1945 output of 2,047 aircraft.

This total includes only aircraft manufactured under CAA type certificates, and does not cover experimental models. The prewar pattern was followed closely, with the two-place plane powered by 51–100 hp. engines accounting for 94 per cent of the total output. Production of the much discussed family size model was confined to one company, whose output came to 11 planes.

1946 Goal, 30,000—Although the production rate showed a sharp acceleration, from 39 in August to 401 in October, and 797 in December, output must continue to advance rapidly if the industry is to turn out its announced goal of 30,000 planes in 1946. An average monthly output of 2,500 planes is required to reach this goal, which is based on reported orders on hand for 50,000 planes.

The 1945 production statistics follow:

Type	*Number*	*Percent*
Landplanes:		
2-place	1,929	94.2
3-place	6	.3
4-place	11	.5
10-place	63	3.1
57-place	10	.5
Amphibians	28	1.4
Total	2,047	100.0%

In This Issue

A&E training and schooling opportunities for veterans ..... page 38
Radar development for civil use ..... page 41
International air agreements ..... page 42
Student pilot briefing in rules ..... page 44
Folding wings for personal planes ..... page 45
Realm of Flight, weather book for pilots published ..... page 52

Funds for A and E Job Training; Schooling Available to Veterans

Honorably discharged veterans seeking CAA Aircraft and Engine licenses can obtain a great deal of financial help from the Veterans Administration, both in getting on-the-job training and financing schooling.

This arrangement is a matter that lies strictly between the veteran and the Veterans Administration, and the veteran must take up with that agency any problems or difficulties arising out of his rights under the "GI bill."

Must Qualify for Exams—The Civil Aeronautics Administration enters the picture as issuing agency of A and E licenses to men who meet the requirements. Final decision on whether a man is qualified to take the examinations rests with the CAA inspector. A veteran who is in doubt about his qualifications should get in touch with the nearest inspector and discuss the matter with him. The veteran should bring all credentials and evidence of his experience with him for the interview. Names and addresses of CAA inspectors are in the back of the book, "Employment Outlook in Civil Aviation," included in the CAA's "mechanic information package."

Unless the A and E aspirant has completed his course at a CAA-approved school, he must have a full year of broad practical experience—not classroom work—either from the service, on a job, or at an unapproved school.

On-the-Job Pay—Some aircraft companies hire mechanics who have had substantial experience in the armed services and give them on-the-job training leading to A and E licenses, paying the veteran a small amount while he learns.

If such an aircraft company has a planned curriculum, and has been approved for training by the state in which the repair facilities are located, the veteran is entitled to a subsistence allowance from the Veterans Administration of $65 a month if single, or $90 if married. He gets this money in addition to the wages from the company, providing the payments from the Veterans Administration, plus the wages from the company, "do not exceed the beginning wage of a trained worker in that occupation."

A few of the men getting out of the Army and Navy have had ample practical experience on all but one or two phases of aircraft and engine repair work, such as welding or wooden propellers, for example. Such men may take the A and E examinations after a little practical work or schooling in the few phases in which they are weak.

Unfortunately, a majority of service mechanics did such specialized "production line" work while in the armed forces that their experience was too limited to meet the experience requirements for an A and E certificate. A man may have worked only on ignition systems, for example, and thus know only one of the many subjects required for A and E licenses. Or he may have spent years replacing assemblies such as carburetors without learning about repair phases of the work.

Some repair specialists are in demand by the airlines and can obtain higher pay than holders of A and E certificates. Others will find that they will need the licenses to obtain a good job. Men in the latter position should plan on completing the full course of instruction at an approved school, or on obtaining their full quota of on-the-job experience before taking the license examinations.

Men still in the Army and Navy often can obtain excellent "refresher" courses at the various air bases, and pass their A and E examinations before returning to civilian life. Unfortunately, except in rare instances, these courses are not open to discharged veterans.

Choose School with Care—If a veteran decides to obtain all or part of his A and E experience in a school, he should select the institution with care. Almost all mechanic schools are approved by the Department of Education of the state in which they are located. This state approval, in most cases, is all that is required for tuition and subsistence payments from the Veterans Administration. Unfortunately, the states vary widely in their requirements for Department of Education approval, so "state-approved" can mean much or little.

However, a diploma from a mechanics school which lacks CAA approval will not suffice in permitting the veteran to take A and E examinations—he will be required to demonstrate that he has had a full year of broad practical experience in addition to classroom work. Likewise, correspondence school courses are not recognized by the CAA.

Relatively few schools are approved by the CAA. These schools have met very rigid requirements for curriculum, equipment, and teaching standards, and the veteran may be sure of worth-while training from any one of them. He may get good training, too, from a school not on the CAA list, but he should investigate carefully to be sure that he will not waste his own time and the Government's money.

Must fill out form—The first step toward getting Government assistance for either on-the-job or school training is to fill out a Veterans Administration Form No. 1950, "Application for Training Benefits." Blank forms are available at most veterans' organization posts, and at all Veterans Administration offices.

The form should be mailed to the Veterans Administration regional office in the state where the applicant lives. In approximately one to four weeks, the veteran should receive a "Certificate of Eligibility" showing the amount of training to which he is entitled. The certificate is presented to the prospective employer or school.

If the school or employer is prompt in forwarding the necessary papers, the veteran should receive his first subsistence check in about three to seven weeks, and additional checks regularly thereafter.

A and E Training Information Supplied in CAA "Package"

A "mechanic's information package" for veterans interested in Aircraft and Engine licenses is available without charge from the Office of Aviation Information, Civil Aeronautics Administration, Washington 25, D. C.

The "package" is designed to provide complete and authentic information to the thousands of servicemen hoping to obtain jobs as aviation mechanics.

Included in the mailing are two booklets, "Aviation Jobs for Veterans" and "Employment Outlook in Civil Aviation"; information about the "GI bill of rights" in connection with on-the-job and school mechanic training; information on license requirements, and a list of approved mechanic schools.

CAR Parts 50 and 29

The amended "Flying School Rating", Part 50 of the Civil Air Regulations, and "Physical Standards for Airmen", Part 29, have been printed and are available at 5 cents each from the Superintendent of Documents, Government Printing Office.

New Staff to Map System of Charges For CAA Services

A Plans and Performance Staff has been created by T. P. Wright, Administrator of Civil Aeronautics, to study broad policy matters, develop recommendations for long-range programs and otherwise handle matters with which the Administrator would like to deal personally if he had the time. The staff will be attached to the Administrator's office, and is necessary, Mr. Wright said, because of the rapid expansion of all phases of civil aviation.

To Plan Service Charges—One of the staff's first assignments will be to devise procedures whereby the CAA can recapture for the Federal Treasury some of the money it spends on services to civil aviation. This is in line with the House Appropriations Committee's request that charges for such Safety Regulation services as recordation and registration of aircraft be instituted early in the fiscal year beginning July 1, 1946, and that a plan of charging for Federal airways services be submitted by January 1, 1947.

CAA Liaison Work—The Plans and Performance Staff will also handle CAA liaison work on the Air Coordinating Committee (a State-Army-Navy-CAA-CAB body); CAA work in connection with the Provisional International Civil Aviation Organization and other international bodies; and the new function of coordinating engineering and other standardization work involved in the CAA's relationships with public and private organizations.

The staff consists of Alfred Hand, Director; Frederick B. Lee and Frank W. Devlin, Program Planning Officers; Hugh H. Cobb, ACC Liaison Representative; and Glen Gilbert, CAA-PICAO Coordinator.

New Ruling by CAB Accords Civic Bodies 'Day in Court'

Chambers of Commerce and civic organizations of a similar character will be permitted to intervene as parties in cases before the Civil Aeronautics Board which involve new routes and other formal proceedings. In announcing the change in practice, the Board pointed out that in the past, Chambers of Commerce and similar civic organizations have been permitted to attend hearings and present evidence relevant to issues under consideration but have not been allowed to qualify as interveners in their own rights.

Under the new policy, organizations which are able to show they have a direct interest in the proceeding, that their interest can not be adequately protected by other parties and their participation will not unduly broaden the issues in the proceeding, may become formal parties to proceedings, and as such, may testify at hearings, file briefs, exceptions, and participate in oral arguments before the Board.

Two Helicopter Models Airworthy

Two helicopter models have been type certificated by the Civil Aeronautics Administration and given the NC designation assigned to airplanes which fully comply with the airworthiness requirements.

The Bell Aircraft Corporation's model 47, two-place helicopter, was the first craft of this type to be approved by CAA. According to Bell Aircraft, 500 model 47 helicopters are in production, with the majority scheduled for completion this year.

Second on the list is the model S-51, four-place helicopter produced by the Sikorsky Division of the United Aircraft Corporation.

CAA Figures Saving Of 9 Million through Surplus Plane Use

Use by the Civil Aeronautics Administration of surplus military planes instead of purchase of new civilian planes to replace obsolete equipment will save the American taxpayer almost $9,000,000 over the next 5-year period, according to John P. Morris, CAA Aircraft Control and Service officer.

To Stockpile Parts—The savings will be effected not only through the use of surplus airplanes themselves, but by the stockpiling of parts also obtained from surplus, and the making of certain repairs by CAA personnel.

The 230 planes distributed through the nine regions in the United States, Alaska and Hawaii, are used for official missions. Among these are standardization courses for safety regulation inspectors; airway patrols to check air navigation facilities; inspection itineraries; airplane surveys, and service to isolated Alaska communications and weather stations.

To Contract for Major Overhaul—The CAA plans to have all major engine overhaul done by contract with the industry. As an economy measure, however, CAA personnel will install and recondition component parts in the field and at a central parts-storage depot.

"Our planes," Mr. Morris said, "will be 'orphaned' unless a supply of spare parts is gathered and stored immediately. The Budget Bureau, in keeping with a policy of using surplus wherever possible, has approved plans for collecting the huge number of parts necessary for a five-year coverage and storing them in a warehouse near the geographical center of the country.

"Some of these types of airplanes will not be manufactured again," Mr. Morris pointed out. "In other instances, parts for newer planes of the same type will not fit planes with older serial numbers. As a result, many spares and component parts will be nonexistent shortly, or scattered as surplus so remotely that acquisition will be impossible unless this 'spare' program is undertaken."

Savings to Taxpayers—Through use of CAA personnel in the servicing of these planes "there will be a great savings to the taxpayer," Mr. Morris states.

"Plane repairs costing more than $100 which are to be made outside of the Federal establishment must be advertised for bids with at least three different concerns participating in the bidding.

"Even if the original bids have been accepted and work on the plane reveals that additional parts and labor are required, we must advertise for supplementary bids—a time-consuming process.

"While all this is going on a plane badly needed in CAA operations is grounded at a great expense to the taxpayer, as economy of operation for an aircraft is only in proportion to the time it is in use.

"We are planning a small-scale repair service patterned somewhat after that used by the airlines. A small supply of component parts, such as propeller assemblies and magnetos, will be kept in stock at the hangars of regional headquarters where they will be available for immediate installation. Regional inspections will continue as heretofore, conducting daily line maintenance, 25-hour, 50-hour and 100-hour checks. We will strengthen and improve this regional work so as to achieve real preventative maintenance.

"By means of this whole plan, we expect to keep all the CAA planes airworthy a high percentage of the time at the lowest possible cost to the taxpayer."

Public Relations Award Goes to Stern

The recipient of the 1945 Award by the American Public Relations Association, Ben Stern, Assistant CAA Administrator for Aviation Information (seated) with chiefs of divisions of his office. Standing, left to right: Ira L. Smith, Publications Division; Richard J. Aubry, Flight Information Division; Stafford Kernan, Aviation Statistics Division; Charles E. Planck, Current Information Division; René Prevost, Visual Services; and Raymond Nathan, Editorial Assistant.

In recognition of outstanding public relations work during 1945, Ben Stern. CAA Assistant Administrator for Aviation Information, received the First Annual Award of the American Public Relations Association for "meritorious public relations performance in the field of government."

The trophy was presented by Secretary of Agriculture Anderson at a dinner in Washington on March 30, and is in the shape of a silver anvil, representing public opinion, mounted on a mahogany stand.

The award was made in recognition of the campaign initiated and directed by Mr. Stern to give "public service through public information." The winning contest entry emphasized the simply written and attractively presented publications of the Office of Aviation Information, including "Civil Aviation and the National Economy," "Path of Flight," and "Small Airports." It pointed out that these publications represented a radically new approach, based on the philosophy that their appeal should be to a mass audience rather than to a select group of "supermen."

Also considered in the selection were the efforts of CAA's Aviation Information to anticipate and meet the needs of veterans. These included establishment of a special "veteran's desk" to handle personal and telephone calls from veterans and the preparation, as early as January 1945, of a series of releases giving guidance to veterans seeking civil aviation employment.

Further factors in the choice were the effective use of visual techniques to implement the information program; statistical services closely tied in with policy-making; and activities to promote United States interests in the foreign field.

The entire program, the judges noted, was carried out with an unusually small staff, and through sale of publications brought back to the government all printing expenses.

Air Marking Guide Available

The "Air Marking" booklet (Civil Aeronautics Bulletin No. 12), August 1945 edition, has been printed and put on sale for 20 cents at the Superintendent of Documents, Government Printing Office.

This booklet gives working details for making rooftop, highway and other community location markers to guide pilots in flight. It specifies size and spacing of letters and numerals and other construction details for the different types of markers.

Airline Business Growing

The Civil Aeronautics Board announces that the mail ton-miles flown by the 20 domestic airlines for the 12-month period ending Dec. 31, 1945, increased 27.63 percent. Express ton-miles increased 30.67 percent over the corresponding period in 1944; and revenue miles increased 50.57 percent. The number of revenue passenger-miles increased 54.14 percent as compared with the corresponding 12-month period a year ago.

14 CAA Safety Regulation Men Back on Duty After War Service

Fourteen employes of the Civil Aeronautics Administration's Office of Safety Regulations, whose specialized knowledge proved valuable in the war against Germany and Japan, have returned to their civilian jobs with broad additional experience acquired in the armed services.

Flies Out War—Commander Almon A. Gray of Bluehill, Maine, CAA Air Carrier Radio Inspector, probably accumulated more flight time during the war than any other non-air crew officer in the Navy. In charge of communications for the Pacific Wing of the Naval Air Transport Service, he flew almost continuously in Alaska and the Aleutians, the Central, South, and Southwest Pacific, Australia, the Philippines, China, and eventually Japan.

Corporal David L. Posner, who was born in Yokohama, Japan—his father was a business man there for seven years—joined the Headquarters Air Transport Command to help carry the war back across the Pacific to his birthplace. Posner is an aeronautical engineer in the Power Plant Engineering Division.

Paves Way for Combat Aircraft—Lieutenant Colonel Everett W. Keeler of West Bridgewater, Mass., Assistant Chief of the Scheduled Air Carrier Maintenance Division, helped establish maintenance facilities for the first movement of combat aircraft across the North Atlantic to Europe. He served also in the North African area with the Air Transport Command.

Lieutenant Commander Harley W. Clapsaddle, who has returned to work in the Technical Personnel Division, Airman Service, spent two and one-half years in the Navy's aviation training program in the United States, and another two years in aviation safety work in the European and North African theaters. Clapsaddle was born in Hanover, Penn.

Major Melvin J. Perrin of Boerne, Tex., Chief of the Manufacturing Inspection Division, Aircraft and Components Service, spent 20 months overseas in the first World War with the 33rd Aero Squadron, and devoted three years in World War II to supervision of aircraft production and inspection work. Perrin has worked continuously for the Government in connection with aeronautics since May, 1917, in military and Civil Service capacities.

In Aleutians and Guam—Colonel Charles F. Taylor of Freeport, Ill., Chief of the Instrument Approach Procedures Section, served in the Aleutians in connection with aviation safety activities, and later was Adjutant General, Army Air Forces, Pacific Ocean Area, with headquarters on Guam.

Commander John R. Hoyt of Mellen, Wis., was a Naval aviator during World War II. He has returned to duties as Chief of the Schools and Training Section, Pilot Division, Airman Service.

Two Army Medical Corps officers have returned to CAA positions. Colonel Walter A. Ostendorf of Baltimore, Md., Chief of the Operational Hygiene Division, Aviation Medical Service, served in North Africa, Italy, and the Philippines. Captain S. A. Thomas of Little Rock, Ark., Chief of the Physical Standards and Review Section, served as Flight Surgeon and gave air crew instruction and examinations.

Staff Sergeant Libert Ehrman of New York City, a member of the Safety Engineering Staff, Aircraft and Components Service, worked with the AAF Office of Flying Safety, preparing analytical and statistical accident studies.

Dive Bomber Engineer—Major George H. Weitz, Chief of the Airframe Section, Non-Scheduled Aircraft Maintenance Division, served in the Marine Corps as Engineering Officer for a dive bomber and night fighter group. Weitz, who was born in Brooklyn, New York, took part in the battles of Pelelieu and Iwo Jima.

Lieutenant Commander Robert A. Burbick, of East Liverpool, Ohio, Chief of the Power Plant Section, Non-Scheduled Aircraft Maintenance Division, was Engineering Officer for the Navy's Bureau of Aeronautics in charge of production of four-engine aircraft in the San Diego, Calif., area.

Colonel Edgar B. Franklin of Prince Edward County, Va., Chief of the Scheduled Air Carrier Division, was Commanding Officer of the Army Air Force Base Unit at Oran, Algeria.

Lieutenant Colonel H. W. Helfert of Sioux Falls, S. D., CAA Air Carrier Inspector, was stationed in Scotland with the Air Transport Command to help control transatlantic aircraft movements. He later helped to establish the traffic-control system used by ATC on the European continent.

Bureau of Standards Develops New Ceramic For Exhaust Stacks

A ceramic coating which will considerably prolong the life of internal combustion engine exhaust stacks has been developed by the Bureau of Standards of the Department of Commerce. A Department release announces that the new ceramic coating has not been widely used on the stacks of airplane engines, but wherever used the "results have been wholly satisfactory."

Protects Exhaust Stacks—In the search for a protective coating which would compensate for the absence of stainless steel, controlled by high priorities, extensive experiments were conducted. It was demonstrated that the addition of certain quantities of calcined aluminum oxide and a slight modification of conventional practice, produced an enamel which would protect exhaust stacks from corrosion. To obtain best results the new ceramic coatings must be applied in thin layers.

On the stacks of aircraft engines it was laid to a thickness of not more than two or three thousandths of an inch. The finish is dull, such as characterizes porcelain enamel and is applied at a temperature of 1600° Fahrenheit, only slightly greater than that ordinarily used.

Gillies to Represent Sixth Region Nonscheduled Fliers

New member of the CAA Nonscheduled Flying Advisory Committee is B. Allison Gillies, of East San Diego, Calif., who succeeds Douglas Robinson, of Tucson, Ariz. He will represent the personal fliers and other nonscheduled aviation interests in the sixth CAA region, which includes California, Nevada, Utah, and Arizona.

Mr. Gillies is a consulting engineer, who operates his own plane from an airstrip on his property. He has been connected with the aviation industry since 1928. First associated with Grover Loening Aircraft Company, he was vice president of Grumman Aircraft Engineering Corp., for ten years, and went to the West Coast in 1944 to join the Ryan Aeronautical Company.

Mr. Gillies took a prominent part in establishing the Aviation Country Club on Long Island, a well known center for private flying.

Vol. 7 April 15, 1946 No. 4

CAA JOURNAL

Henry A. Wallace
Secretary of Commerce

Civil Aeronautics Administration
T. P. Wright, Administrator

Issued on the 15th of each month. Subscription $0.50 a year in the U. S. and Canada. Foreign countries, $0.75. Sold by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Approved by the Bureau of the Budget.

PREPARED BY AVIATION INFORMATION

CAA Answers

Q—How long may a pilot stay in an airport after landing without filing a new flight plan, and what are the AAF regulations in this particular?—G. D.

A—All non-scheduled planes flying under IFR must file a new flight plan regardless of the length of stay at an intermediate airport according to the manual of operations agreed upon by Army, Navy, and CAA. Only scheduled flights may make intermediate stops for specified periods without filing such plans. No flight plan, however, is required for contact flight rule operations.

Q—What is the runway length required for a Constellation airplane?—A. J. B.

A—With a total weight of 90,000 pounds, a runway of 4,000 feet for sea level operation is necessary. A total landing weight of 77,800 pounds also requires a 4,000-foot runway.

CAA Designates 300 Aides To Inspect Plane Repairs

Rapid designation of aircraft maintenance representatives is providing private aircraft owners throughout the country with speedier means of getting annual and repair inspections.

With over 300 of these "extra" inspectors already appointed, and about 100 recommendations pending, the CAA is moving toward its goal of having available at the majority of airports, field personnel competent to examine a repaired plane and authorize its return to service.

By the first of next year, the CAA plans to have 1,000 maintenance representatives at several hundred fields located conveniently for private fliers all over the country. Present regional scores are: region I, 56; region II, 37; region III, 41; region IV, 57; region V, 38; region VI, 44, and region VII, 31.

Individual mechanics with adequate experience and ability are recommended by CAA inspectors in the field and their appointment is made from Washington.

Military Engines Approved Without Type Certificates

Pratt & Whitney R-2800-65. 18 cyl. two row radial aircooled. Two stage with one fixed speed and the other with high speed, low speed, and neutral drive gearing for supercharging. Rated 2000 hp at 2700 rpm for take-off; 1675 hp at 2550 rpm in neutral auxiliary blower, 1625 hp at 2550 rpm in low ratio auxiliary, and 1550 hp at 2550 rpm in high ratio auxiliary. Uses Grade 100 fuel. (Civil Aeronautics Administration specification 5E-8, dated February 15, 1946.)

CAA Has Three Radar Projects Under Development

First Use on Civil Airways Will Be in Scanning Screen At Airport Control Tower

Radar, valuable civilian inheritance from the war, has a development road to travel at the CAA Indianapolis Experimental Station before it can be adapted to commercial operation, CAA engineers, airline pilots and airline engineers agree.

"We cannot immediately apply the newest things in radar to actual operations of the airlines," Donald M. Stuart, Chief of the Technical Development Service of the CAA, said. "With all radar's promise it must undergo further development before its use is acceptable to the airlines, to the airline pilots and to the safety regulation officials of the CAA, all of whom are directly concerned with the safety of the flying public. Radar might be said to be in the third stage in our development of instrument landing and approach control. Today, we are using low frequency equipment which has definite drawbacks. We are now changing over to very high frequency band where static and interference has less effect. This is stage two and we are also working to apply radar, which will be stage three.

"Undoubtedly we are in for major changes in airway aids as a result of the invention and development of radar appliances during the war. This may actually shorten stage two materially, and we may find it possible in some cases to move directly from low frequency to radar aids."

At Work on 3 Projects—First use of radar probably will be in air traffic control. A scanning screen soon will be installed in the Indianapolis tower for use in approach control and landings and, when its value and technique of use are established, will be repeated in traffic towers serving most important airports along the 26,000 miles of airways.

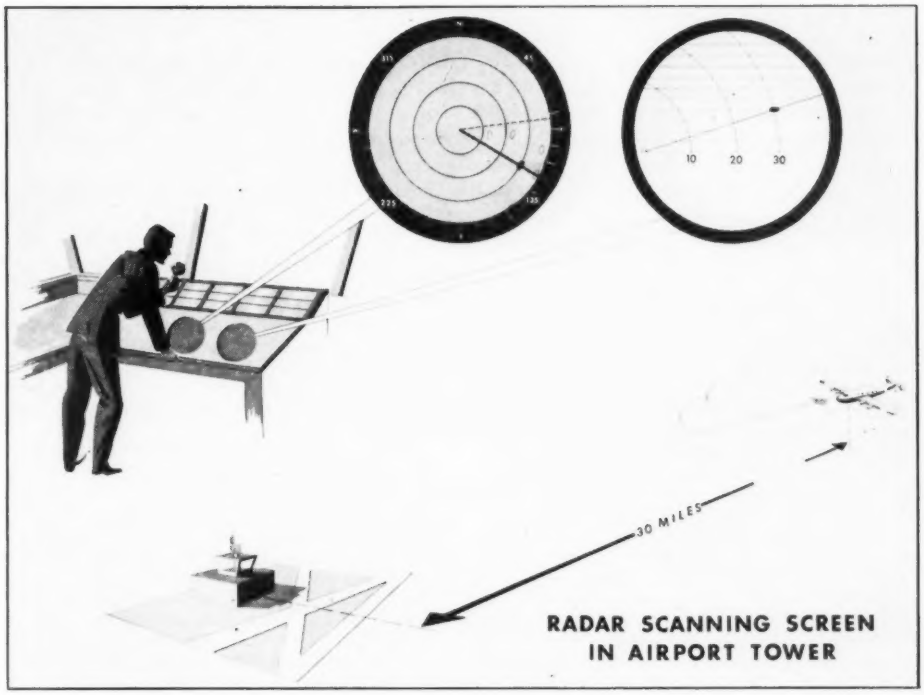
Second use commercially of radar probably will be as a distance indicator in airplanes, a device by which the pilot will be told his exact distance in miles from his destination, or an obstruction to his flight. While this is not "true" radar, but more accurately an application of radio principles, it can be considered as a radar development.

The third use now under development at Indianapolis has many problems connected with it, and will need considerably more development. It is a radar collision prevention device for use in the airplane to warn the pilot of approaching collision with other planes or objects on the ground. Today, the equipment for this device is too heavy and too costly for use by air transports, and its operation probably would require an additional member of an airliner's crew.

These three projects are all the CAA can afford at Indianapolis on its present budget. More extensive development of radar can be undertaken in the new fiscal year beginning July 1.

The necessity for seeking appropriations for each specific project at the Experimental Station precludes many parallel studies on the other radar equipment given by the Army and Navy to the CAA just before the war ended. This year the CAA has only $87,000 for radar development.

To "See" Planes with Radar—Ability of radar to "see" planes and objects otherwise obscured makes it particularly valuable in air traffic control, especially near airports where there is traffic congestion. A scanning screen will supplement the present method of "stacking" planes at 1,000-foot altitude intervals, while the lowest plane is cleared to come in and land. The controller's ability to "see" the planes will expedite this process and make it possible to bring planes in safely at two and perhaps one-minute intervals. The best time possible under present conditions with the CAA instrument landing system as demonstrated recently at Indianapolis, was at three-minute intervals. Without these aids the time is 12 to 15 minutes.



Two scopes in the airport control tower—one giving direction of plane by compass indication, and the other giving distance and altitude—show the controller what direction the plane is from the tower, what direction it's flying, how far away it is and at what altitude.

Instrument landing techniques by airliners also will be affected by radar, CAA officials say. The present CAA three-element instrument landing system, in standard use by the Army during the war, and on which hundreds of pilots have made thousands of blind landings, now is being installed at 100 major airports. It consists of the localizer which guides the pilot from 15 miles out along a straight line to the center of the runway, a glide path which guides him down a safe angle to the surface, and two or more marker beacons which inform him of his nearness to the field.

Substitution of the radar "ground controlled approach" for this system is unwise at this time, CAA engineers believe, and they are supported by airline pilots. It will rather supplement them. Recently, a letter from American Airlines said, "Advanced radar and similar techniques are very promising, but give us good runway lights, approach lights, localizer, glide path and two non-directional homing stations in line with all landing directions to be expected under instrument low approaches—and do this at all our airports—and we will show schedule regularity record that will be hard to beat with any of the so-called advanced techniques."

These facilities now are in service at many airports and are being installed as rapidly as equipment can be obtained. The homing stations are being obtained as surplus material from Army and Navy sources, and airline pilots are using this system with which they have long been familiar.

Takes Crew to Run It—The problem of substituting radar ground controlled approach for this method illustrates clearly one of the problems of air navigation aid development. At present the Army's ground controlled approach GCA apparatus requires a crew of five men to operate it. In contrast, the CAA system is automatic and requires only the services of the radio maintenance man at the airport where it is installed. The personnel problem in using the radar system is staggering. It would mean a crew of five men working an eight-hour shift, on a 40-hour week, for each major airport where instrument landing aids are required.

Indicator for the CAA system is in the pilot's cockpit and consists of an instrument with crossed needles. The vertical needle indicates when he is on the path of the localizer, and the horizontal needle indicates when he is on the proper glide path. Thus when they are crossed in the center of the instrument, he is approaching on the proper course and descending at the proper and safe angle. Marker beacons cause lights to flash on the instrument panel as the pilot flies through them, telling him he is five, or three miles from the runway, or over the end of the runway. The homing stations lead the pilot the last few miles to the airport, and with two of them lined up along the approach runway, he can get squared away for a straight approach by a simple flying procedure.

In the ground controlled approach radar system, operators on the ground direct the flight of the pilot as he lands. Their radar scope gives them his position in the air, and they instruct him to move right or left, up or down as required for a safe landing. This was done successfully during the war and its application to civilian flying is under study, either as a substitute for the CAA system or more likely as a supplementary aid.

Tests of the ground controlled approach equipment at Indianapolis will be conducted with aircraft of varying sizes to determine the manner in which large metal airplanes reflect back radar pulses in comparison with smaller planes made of different material.

(See Radar, page 44)

U. S. Wins Valuable International Air Rights at Bermuda Conference

Described as a "major landmark in the history of international aviation" the Bermuda Civil Aviation Conference, attended by the United States and the United Kingdom, came to a successful close on February 11 after a month of negotiations. In describing the agreements between the two nations, L. Welch Pogue, Chairman of the Civil Aeronautics Board, and member of the nine-man American delegation, declared:

"We believe that this agreement will assist the United States in important ways in achieving the world-wide route system which this Government proposed in 1944."

No Limit on Flights—As a result of the conference each country is now allowed to decide frequencies of flights of its own airlines, which means that service can be stepped up as rapidly as the traffic will bear. This was considered a victory for the American delegation as Britain had opposed such freedom at the Chicago International Civil Aviation Conference in 1944.

Agree on Rate Setting—An agreement was also reached in the setting of rates for air transportation, which may be fixed in three ways. An air carrier may propose a rate which, if no one objects, automatically goes into effect. Second, one or more U. S. carriers may agree among themselves, or with a foreign air carrier on what rate they would like to have in effect, but that agreement is entirely subject to Civil Aeronautics Board approval. Third, if either government objects to a rate, they will consult as to what the proper rate should be, and, if they can not agree, will appeal the question to the Provisional International Civil Aviation Organization (PICAO) for an advisory report.

The Board said it would renew its request to Congress to give it the same broad power over the rates of U. S. air carriers in foreign air transportation that it now has over our domestic airline rates. In the meantime the Board approved the traffic conference machinery of the International Air Transport Association (IATA) for a period of one year on the condition that no rate agreement of other action of IATA be binding unless the Board decides such agreements are not adverse to the public interest.

Win Fifth Freedom—One of the most controversial subjects settled at the Bermuda Conference was the question of the Fifth Freedom, which was one of the big obstacles at the Chicago Conference a year earlier. The right of commercial aircraft to fly over and land in a foreign nation for refueling while in commercial transit was determined at Chicago. The Fifth Freedom now permits the air carriers of each country to engage in international traffic at all of the points in each other's territory covered in the traffic routes from one foreign country to another.

Thus approval was given to the right of American aircraft, landing in London on the way to Copenhagen, to pick up passengers in London, and the same for planes stopping in Trinidad or Singapore or anywhere else in British territory.

This right applies to through routes only and does not apply to the traffic within a nation. American planes can not pick up passengers in London for Edinburgh, for instance, or British planes pick up passengers in New York for San Francisco. National traffic is reserved for national air carriers.

Exclusive Use of Military Bases—Satisfactory agreements were also concluded with respect to commercial aviation use of U. S. military air bases on British colonies. Originally leased for 99 years for military use only, the agreement provides that no foreign airline may share in the use of these bases unless agreed to by the United States.

Traffic Rights at 18 Points—Air transport privileges, essential to the world route pattern planned by the Board, were obtained at 18 points in the territories of the United Kingdom. These include full traffic rights at points in the strategic British islands lying off the east and south Atlantic U. S. coasts, the British Isles, and United Kingdom possessions in Africa, the Middle East and the Orient.

In return for these rights the British Empire required certain reciprocal rights of the United States. Chairman Pogue points out that because of the geographical relation of our respective territories to our world route pattern, the traffic rights required and obtained from the British Empire by the United States were very substantial.

"We believe," he says, "that they were fully as great as the reciprocal traffic rights granted by the United States to the British Empire. In any appraisal of the net results of the Bermuda Conference, this fact should be borne in mind."

The American delegation included the following State Department officials:

George P. Baker (chairman of delegation), director, Office of Transport and Communications Policy; John D. Hickerson, deputy director, Office of European Affairs; Stokeley W. Morgan, chief, Aviation Division; Garrison Norton, deputy director, Office of Transport and Communications Policy.

Delegates from the Civil Aeronautics Board, which was represented by all the members, were Chairman L. Welch Pogue; Members Oswald Ryan, Harllee Branch, and Josh B. Lee; General Counsel George C. Neal, and Liaison Consultant John Sherman.

Oswald Ryan Is Appointed As Vice Chairman of CAB

Oswald Ryan has been named vice chairman of the Civil Aeronautics Board to fill the vacancy left by the resignation of Dr. Edward P. Warner to become president of the Interim Council of the Provisional International Civil Aviation Organization.

Oswald Ryan

Mr. Ryan, who is one of the original CAB members, left his Indiana law practice to become general counsel of the Federal Power Commission in the Hoover Administration. He continued in that office until President Roosevelt appointed him a member of the Civil Aeronautics Board in 1938.

Mr. Ryan served as a member of the United States delegation in the negotiation of the recent air agreement with Great Britain which was concluded at Bermuda. He served on other diplomatic missions including the 1945 conference with Canada and an air mission to Spain.

Air Carrier Revenues Increase

Net operating revenues for all domestic airlines for the year ending Nov. 30, 1945, was $37,606,248 compared with $34,363,434 for the preceding 12 months according to figures compiled by the Civil Aeronautics Board. Express and freight revenues increased from $8,016,260 to $10,944,996.

Hearing on Pilot Work Hours

A possible revision in the number of hours air carrier pilots may be on duty is being considered by the Civil Aeronautics Board.

The Board is initiating the investigation in this matter in light of the experience gained from the extensive and varied air transportation operations carried on by both civil and military agencies during the past five years.

A hearing date will be set which will give all interested persons an opportunity to present their views on flight time limitations for various types of equipment and operations now being conducted or anticipated in the immediate future.

Caribbean Line Move Is Denied by the CAB As Violation of Act

Charging that the National Airlines had acted "wilfully and knowingly" in violation of the Civil Aeronautics Act, the Civil Aeronautics Board has denied it permission to acquire control of the Caribbean Atlantic Airlines, a Puerto Rican carrier. The Board in its decision points out control was obtained without prior approval.

Ends National Control—The Board's order requires that National cease from further violation of the Act in exercising control of Caribbean, that it divest itself of all control "direct or indirect," and return to the stockholders of Caribbean all stock deposited with National as part of the purchase agreement.

The Board also disapproved the agreement entered into by National and Caribbean for the use of certain equipment and personnel of National on the Puerto Rican airline's operation.

In Operation Since 1945—This agreement has been in force since early 1945. Under the Board's denial order National's planes and personnel must be returned to National, and Caribbean must be restored to its former status as an independent airline.

In stating its reasons for disapproval of the transaction the Board found a lack of integration between the two airlines which would not result in a sound air transportation system.

The Board also found inequities in the disproportionate exchange of stock for the control of Caribbean under the acquisition agreement, and said that such inequities inevitably have an adverse effect upon the integrity of investments in airline securities and may be expected to impart a speculative character to such investments which would increase the cost of capital for the industry.

The Board stated "The attitude and conduct of the management of both companies in this transaction are inconsistent with the objectives of the Civil Aeronautics Act and not conducive to the best development of the air transportation industry. The legislative authorization to acquire control of another air carrier is expressly contingent upon obtaining approval of the Board, and if approval of acquisitions were to be accomplished widely in the manner sought here, our efforts toward the proper administration of the Act from the long-range point of view would be hampered, with an attendant substantial menace to the public. We will not, therefore, countenance the continuing wilful violation by National."

8 Region Men Broach "Grass Roots" Ideas For Private Flying

From the "grass roots" eight veteran aviation experts brought the views of private plane owners, flight students, and airport operators to Washington in the first meeting, March 4-6, of the regional private flying specialists of the Civil Aeronautics Administration.

Plans were made for aggressive promotion of private flying, and the specialists suggested methods to be followed to T. P. Wright, Administrator of Civil Aeronautics, and John Geisse, his Assistant for Personal Flying Development.

5 Hours Dual Instruction—One of their recommendations now being considered by the Administrator, is a change in the requirements for training for a private pilot's license. Instead of requiring 10 hours of dual instruction, at least two hours of which must be after solo, the specialists advocated that, of the 10 hours, only five be required from a rated instructor, not less than four of these after the first solo. This change would recognize the inevitable practice of licensed pilots who are not rated instructors in giving their friends instruction, but would still leave the important matter of judgment of an applicant's ability in the hands of an instructor whose competence is recognized by a CAA rating.

The specialists also urged use of radio at small airports, suggesting that a low-powered, short-range inexpensive transmitter in the hands of the airport operator would increase safety of operations, and facilitate gathering of weather information for pilots at small airports. Another recommendation that a distinctive, inexpensive flashing light which can be seen in the daytime be used to aid pilots in locating airports was referred by the Administrator to CAA technical men for consideration.

To Produce Booklets—Booklets for guidance of private fliers, including one on dangers to flying peculiar to certain terrain, encouragement and formation of flying clubs, and additional uses of the airplane by individuals and commercial operators, will be produced with the cooperation of the specialists.

Less noise from the private plane, better supervision by plane manufacturers of service charges by their distributors, more uniformity in sales and service practices, equality of air traffic control handling of private and scheduled airline pilots, and guidance to veterans seeking aviation training, were other subjects discussed during the meeting.

List of Specialists—Following are the specialists who are assistants to regional administrators for personal aircraft development, their headquarters, and the areas they represent.

Roland Rohlfs—region I, 385 Madison ave., New York 17, N.Y.; Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New Jersey, New York, Pennsylvania, Delaware, W. Virginia, Maryland, Virginia and District of Columbia.

Carl Clifford—region II, 84 Marietta st., nw, Atlanta 3, Ga.: North Carolina, South Carolina, Tennessee, Florida, Georgia, Alabama and Mississippi.

Charles C. Cox—region III, 608 South Dearborn st., Transportation Building, Chicago 5, Ill.: Ohio, Indiana, Michigan, Kentucky, Illinois, Wisconsin, Minnesota and North Dakota.

William H. Berry—region IV, P.O. Box 1689, Ft. Worth 1, Tex.: New Mexico, Texas, Arkansas, Louisiana and Oklahoma.

Lester B. Littrell—region V, City Hall Building, 9th Floor, Kansas City 6, Mo.: South Dakota, Nebraska, Colorado, Wyoming, Missouri, Kansas, Iowa.

Marshall E. Beeman—region VI, 1500 Fourth st., Santa Monica, Calif.: Arizona, California, Utah and Nevada.

Wiley R. Wright—region VII, P.O. Box 3224, Seattle 14, Wash.: Montana, Washington, Oregon and Idaho.

Virgil D. Stone—region VIII, Anchorage, Alaska.

CAA and CAB Releases

Copies of CAA releases may be obtained from the CAA Office of Aviation Information. CAB releases are obtainable from the Public Information Section of the Board. Both offices are located in the Department of Commerce Building, Washington 25, D. C.

Administration

"U. S. Aviation Experts to Confer in Dublin on Atlantic Route"

"Donald R. Harvey to Head CAA Personnel Office"

"CAA Cites Milwaukee's Good Example in Building 'Doorstep' Airport"

"CAA Appoints Young as First Region Administrator"

"CAA Appoints Kline as Federal Airways Head"

"M. Justin Herman is Named Head of CAA Air Education"

"100 Designated Aircraft Maintenance Men Now Helping CAA Inspectors"

"CAA Private Flying Specialists Begin Promotion of Personal Flying"

"CAA Head Sets up Staff for Long-Range Air Plans"

"CAA to Save $9,000,000 by Use of Surplus Planes, Parts"

"CAA Launches Employee Safety Drive"

"14 CAA Men Return from War to Safety Regulation Positions"

"Airport Obstruction Charts now Available at Coast & Geodetic Survey"

(Notice) "To the Veteran"

(Notice) "Veterans Administration Offers A and E License Aids"

"Burgess Calls for Personal Plane Safe Enough for Grandma to Fly"

"CAA will Provide Veteran with A and E Training Information"

"2,047 Civil Aircraft Produced in 1945, First Official Peacetime Report Shows"

Board

March 1—"Acquisition of Control of Caribbean-Atlantic Airlines, Inc., by National Airlines, Inc., Disapproved by CAB"

March 4—"Oswald Ryan Appointed Vice Chairman of the Civil Aeronautics Board by President Truman"

March 8—"Chambers of Commerce Permitted to Intervene in Formal Proceedings before Civil Aeronautics Board"

March 13—"Report on Pan American Airways Accident at Fort de France, Martinique on August 3, 1945"

March 18—"Examiners Report on Consolidation of Certain of Their Routes by American Airlines, Pennsylvania-Central Airlines, Transcontinental & Western Air, Inc., and United Air Lines, Inc."

March 20—"Report on Pennsylvania-Central Airlines Accident at Morgantown, W. Va., on April 14, 1945"

March 25—"Temporary Rate for Carriage of Air Mail Fixed by Civil Aeronautics Board for Essair, Inc."

March 27—"Examiners Report on Suspension of Service at Clarksburg, W. Va., and Morgantown, W. Va., by Certain Air Carriers"

Burgess Calls for Designing of Safe Personal-use Plane

The personal aircraft must be so designed that both grandmother and her sub-debutante grandchild can drive it with a degree of safety comparable to that of driving an automobile along a public highway, George Burgess told an audience at the Northwest Annual Airshow in Minneapolis recently.

Five Prerequisites—Mr. Burgess, who is assistant to William A. M. Burden, Assistant Secretary of Commerce, listed improvement in design as one of five prerequisites to attainment of the Civil Aeronautics Administration's estimate of a 400,000 civil aircraft potential in 1955. The others are expansion of airport facilities, broader aviation education in the schools, simplification of Federal regulations, particularly in the field of private flying, and continued development of technical safety devices.

Simple as Driving Car—"With reference to the personal aircraft," Mr. Burgess said, "I am confident that within five years anyone who has $3000 will be able to purchase a five-place airplane with similar internal appointments to that of a good automobile. It will be as simple to fly as to drive an automobile on a public highway, will cruise at 125 to 150 miles an hour, and land below 50 miles an hour.

"While we may, five years hence, still be limited to some degree by weather conditions, it won't be long thereafter before we can get into our little aircraft and go zip to wherever we wish at night or in foggy weather.

"Today's prototype aircraft that will be on the market in 1947 will be pretty close to that airplane which your mother and your debutante daughter can fly with ease and safety."

Must Know Weather—"One word of warning, however. Learning how to fly is only the first step. The next steps which may or may not take longer are the absorption of sufficient knowledge concerning the appearance of the ground from the air to keep from getting lost, and learning to read the expressions on the face of Old Man Weather so as to keep out of trouble with him."

Mr. Burgess predicted that the law of economics, rather than scientific development, will be the limiting factor in commercial airplane speeds.

"The idea of breakfasting in Minneapolis, having a leisurely lunch in London, and dining in Calcutta is glamorous indeed," he said. "But, like all glamour, it is beyond the pocketbook of the ordinary traveler."

3-cent Fare in Near Future—"However, a fare of three cents per passenger mile, as compared with the present four and one-half cents, should be obtainable on a three-hundred-mile-an-hour airplane is closer to five than ten years. This brings Paris within about $150 and 14 hours of Minneapolis. New York would be only $30 and three and one-half hours away, and we could roll down to Rio for $200 in 22 hours.

"Perhaps best of all, the Lake of the Woods would be within six dollars and forty-five minutes of where we are sitting tonight. There is little doubt that short-haul scheduled and non-scheduled air transports will carry Aunt Susie 75 to 100 miles to have lunch with Cousin Julia, and hundreds of thousands of others on business, social and pleasure trips of 75 to 200 miles.

"In short, the 200-to-300-mile-per-hour airplane at three cents a mile looks much more inviting to me than jet propelled 400-to-500-mile-per-hour cocktail lounges."

Certification, Safety Procedures Outlined in 'Student Pilot Guide'

Pertinent information, which every novice should have and know, is presented in the CAA's "Student Pilot Guide."

Necessary steps for replacing a student certificate with a private pilot certificate and data regarding air traffic control methods and safety procedures are also among the subjects outlined in the "Guide" which is available from the Office of Aviation Information.

For example for proper control of air traffic, certain areas have been designated and classified as follows:

Airport Traffic Zone—An area within a 3-mile radius of the center of a designated airport. Air traffic within this area is supervised by the airport control tower.

Airport Approach Zone—An area within approximately a 10-mile radius of any airport which provides radio facilities for instrument approach procedures. (The exact size of the approach zone is shown on current aeronautical charts.) During periods of low ceilings a pilot in this area should be alert for aircraft breaking out from the overcast.

Civil Airway—An area designated for use in air commerce, 10 miles in width, connecting geographical points, as shown on aeronautical charts. Pilots flying on the airways should be particularly alert for air traffic moving at high speed.

Control Area—An area within which a Control Center supervises air traffic (usually of aircraft on instrument flight). Ordinarily the term "Control Area" applies to Civil Airways, although some portions of civil airways are not under control, and a control area may extend beyond the limits of a civil airway.

Aircraft Certification—All airplanes in flight must carry a Registration Certificate, an Airworthiness Certificate, and an Operation Record. The Operation Record specifies limitations (which include speed, loading and balance) that should be carefully observed. Airplanes must display registration symbols indicating the type of operation for which they are certified. NX means experimental; NR means restricted to certain activities; NC means fully complying with CAA airworthiness requirements and equipped with specified accessories such as compass, fuel guage, altimeter, safety belts, etc.

Aircraft Inspection—An airplane privately owned and operated must be given an annual CAA inspection. If used for hire, an airplane must be given a periodic inspection for each 100 hours of flight time.

Private Pilot Certificate—Before your student pilot certificate expires (it is effective for 24 months) you will wish to replace it with a private pilot certificate, which grants you the privilege of carrying passengers (but not for hire).

When you have had your student certificate endorsed for cross-country flight, you may obtain your private pilot license by meeting the following requirements:

Age: 17 years or more.

Flight Experience: A total of 40 hours, with minimums as follows:

Dual time—At least 10 hours with a certificated flight instructor, 2 hours of which have been flown after first solo.

Solo time—At least 30 hours, 3 of which were in cross-country flight. One cross-country flight must be made to a point not less than 50 miles distant, with two full-stop landings at different points along the course. Note: For a rating which restricts the pilot to non-spinnable airplanes the flight experience required is a total of 27 hours, consisting of 7 hours of dual time and 20 hours of solo time.

(Although a student may fly with any qualified pilot and receive instruction, he is not permitted to count this time as part of the 40 hours of the required flight experience.)

Flight Test: Three "spot" landings, one of which includes a slip. Three around-pylon figure eights. Two power turns, of 720 degrees with a bank of more than 45°. Climbing and gliding turns at minimum controllable speeds. Power-on and power-off stalls entered from straight flight and from turns. One turn spins. (Spins are not required for a rating which restricts the pilot to the operation of non-spinnable aircraft.)

Safety Practices and Procedures—Believing that the safe operation of aircraft can be more successfully accomplished by pilot education than by strict regulations, the Civil Aeronautics Board revised the regulations in 1945, eliminating many specific rules which had previously been in effect.

Consequently the observance of the present minimum regulations will not necessarily serve as a complete guide to safe flying practices. The intelligent and careful pilot will seek additional guidance which comes from the knowledge of experienced pilots and from the analyses of accident records.

Low Altitude Flying—Although the Civil Air Regulations at present permit hedge-hopping and flight at tree-top level in certain places, you should not be misled into thinking that this is safe.

Most of the casualties in aviation have been caused by maneuvers at low altitudes. In case of engine failure you have no choice of a landing field, and no opportunity to maneuver to avoid obstructions or even to head into the wind. Sudden turbulence, a minor distraction, or slight inattention may put the plane momentarily out of control, without sufficient altitude to effect recovery.

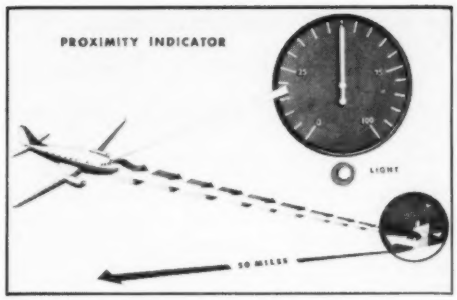
Flight in Poor Weather—The regulations have been revised to permit contact flight when the ceiling is far below the minimum of 1,000 feet previously established. Consequently the inexperienced pilot needs to be warned that a low ceiling is extremely dangerous. For one reason, it forces the pilot to fly at low altitudes and thus incur all the danger of low altitude flying discussed above. Furthermore, it greatly increases the chances of getting lost, with the attendant possibilities of fuel shortage and forced landing.

Perhaps the most serious hazard, however, is the unpredictability of weather under marginal conditions. The ceiling may descend to zero without warning. The plane may suddenly fly into a cloud bank or into a fog-covered area and thus lose all visibility before the pilot is aware of the situation and he may find it impossible to see the ground beneath him. Under such circumstances he would soon lose control of his plane and crash. Even if he succeeded in turning back he might find that the weather had closed in behind him as well as in front.

Aerobatics—The Civil Air Regulations permit considerable latitude in performing aerobatics. Accident investigation shows that most accidents associated with aerobatics fall into two categories: (a) structural failure; (b) maneuvers at low altitudes.

Since increased stress caused by violent maneuvers may result in structural failure, it is highly advisable for a pilot to use a parachute during solo aerobatics, even though this is not required by regulations.

The regulations prohibit aerobatics only when over congested areas or assemblies. However, to avoid possibility of collision with other aircraft, a pilot should refrain from aerobatics on congested civil airways, over airports, or under conditions of limited visibility and ceiling.



Distance indicator pictured above gives pilot exact number of miles from airport.

Radar

(Continued from page 41)

Lt. Col. C. B. Sproul, of the Army Air Forces Training Command, will also make tests of ground controlled approach equipment, using Army and airline pilots. He will use a military four-engined airplane.

At the conclusion of these tests, accurate comparisons will be available of the radar and VHF instrument landing systems.

Indicates Objects in Path—The collision prevention device figures in the news every time there is an airline accident. It is one of the most serious and most pressing of CAA safety projects. Through use of the radar "pulse" system, by which a signal is sent from the plane and bounces back from an object in its path, it is possible to tell the pilot he is approaching a mountain, or building, or other aircraft. To be effective this indication must be "in the pilot's eye" every second during flight when collisions are possible. This introduces the basic problem of getting this information to the pilot. Obviously, he cannot sit with his eyes glued to the one indicator. He has other things to observe. It might be possible to assign another member of the crew to watch the indicator, or assign an additional member, and provide instantaneous communication between him and the pilot. This introduces further weight problems.

Still more important than informing the pilot of an obstacle ahead, is to tell him the exact nature of the object and give him quick guidance in how to avoid it. He might be able to swerve away from a mountain peak in the few seconds available at his high speed of travel, but he must also be informed as to what he may be headed for in the new direction. At today's high speeds, and the still higher speeds to be expected in the future, the range of such a warning device is highly important.

This radar item, important as it is, will require much more study, CAA engineers believe.

Gages Distance—A distance indicator is simpler, less costly and more informative. It consists of a transmitter in the plane which sends out a signal which "triggers" another transmitter at the airport to which the pilot is flying. The signal from this second transmitter is received in the plane, and the time required for the two signals is translated into miles. Thus a simple gauge calibrated in miles, tells the pilot how far he is away from the field where he intends to land. The scale could also be made to read in yards or hundreds of yards if required in making bad weather approaches.

Use of this device—and CAA officials believe it is near—would make possible elimination of most of the marker beacons along the airways. These beacons are simple transmitters to inform the pilot of his position as he flies through them. They are an integral part of the instrument landing system.

Further application of this distance indicator might be made along the specific airways where high mountain ranges are to be crossed, thus giving the pilot warning long in advance that he is approaching a possible flight hazard.

Folding Wings Seen As Great Advantage For Private Flying

Folding wings for personal airplanes will cut hangar storage costs, increase airport earnings and mean a net saving of from $1300 to $1800 to the owner over a period of ten years, according to estimates made by John H. Geisse, Assistant to the Administrator for Personal Flying Development, Civil Aeronautics Administration.

Cuts Construction Cost—"That simple, inexpensive improvement would save airplane owners $150 or more a year in storage charges and at the same time increase the airfield owner's income," Mr. Geisse said. "With folding-wing planes the cost of hangar construction per plane would be cut two-thirds or more, and the number of planes which could be accommodated at a small airfield greatly increased.

"The shortage of small airports in the larger cities already is serious, and as private flying increases will become critical. One factor holding back development of such airports is the high cost of land, which will store only a very limited number of airplanes per acre."

New airfields in urban areas will be built, Mr. Geisse believes, only if they have some chance of profitable operation. The airfield operator's income from sale of gasoline and oil, from concessions and from repair work is almost directly proportional to the number of planes operating out of his field.

16 Planes to the Acre—"Only about sixteen planes of conventional design can be hangared on an acre of ground with sufficient room for taxiing during busy periods. But if all the planes using this acre were of folding-wing design, the number would jump to forty-five or fifty. The difference might make mid-city skyparks and similar projects much more attractive than they are now from an investment standpoint," he pointed out.

"The land used for runways and approaches gives the airport operator no direct income. He must depend on his hangar, service and concession areas for everything which goes into his cash register. In a mid-city skyport, about half the land might be 'productive,' and the rest devoted to runways and taxiways.

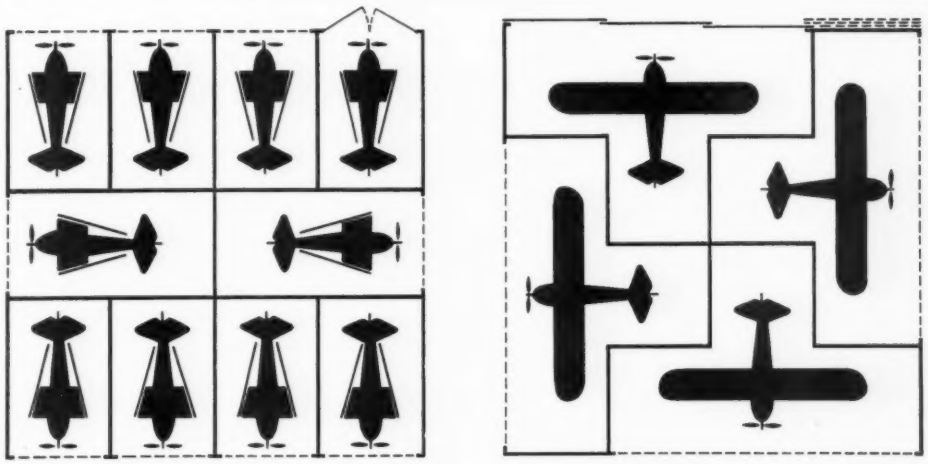
"A mid-city skyport costing $2,000 an acre, for example," explained Mr. Geisse, "represents an interest rate of about $100 per acre annually. If the over-all net income were $90 an acre, the operation would be unprofitable. But if the folding-wing design could help double the net return from the 'productive' acres, the over-all net income would rise to $135 an acre, making the skypark an attractive investment."

The private flier too would benefit greatly from the folding wing, Mr. Geisse says. Present-day storage charges for a small airplane in an individual hangar, even miles from a city, range from $20 to $40 a month. This cost continues month after month whether the plane is used or not.

The two chief reasons for this high cost are the large ground area necessary to house a standard-type airplane, and the high cost of the huge hangar doors and special hardware needed. These doors usually cost as much as the rest of the hangar structure combined.

A standard-type hangar 56 feet square, for example, will hold only four airplanes in individual enclosures. Yet ten planes of the same size with folding wings could be stored in the same size building, each in a separate room with generous locker and bench space. And the ten-plane hangar would cost the airplane operator substantially less than the present-day four-plane design. The saving would be largely in the kind of doors used and in obviating the need for expensive trusses.

Folding Wings More Than Double Hangar Capacity



This CAA drawing of a standard 56-foot hangar shows how ten airplanes could be stored where four are now if manufacturers provided folding wings. Instead of four sliding doors, each requiring an expensive 40-foot truss, inexpensive "barn" doors could be used, swung on simple hinges. Storage rates for owners would be lower, income for the operator higher, and construction costs greatly reduced.

Long in Use in England—"Personal planes in England have had folding wings for years," Mr. Geisse said. "In this country, many people have been afraid the wings would fold in the air. Actually, the joint where it folds is the strongest part of the entire wing. The mechanism can be locked with a key and padlock if desired for psychological effect.

"The Navy turned to folding wings because the space problem on a carrier is like that of a small airfield. During the war, these folding-wing planes proved their reliability and safety by millions of hours of flying under the roughest imaginable conditions."

The estimated cost to the manufacturer of adding a manually-operated folding wing to a small plane ranges from $100 to $250, depending on size and type. The plane owner, Mr. Geisse believes, would get his money back in about a year because of reduced storage costs. If his plane lasted a normal ten years, his net saving from the folding wings might run between $1,300 and $1,800.

There would be many secondary benefits from the folding feature.

"For one thing, it would be much easier to tie the plane down in the open," Mr. Geisse said. "There would be less chance of damage from wind and hail than there is with outstretched wings. Also, the entire plane could be easily covered with canvas. Lower insurance rates probably would result.

"Moving the plane in and out of the hangar would be simplified and there would be less chance of damage to the plane inside the hangar. Taxiing with the wings folded would be safer, and in an emergency, towing the plane along a lane or highway would be a simple process.

"These are all points which the manufacturer might keep in mind for the greatly-improved personal planes which we hope will appear in the next two or three years."

New Chart Series to Mark Obstacles at Main Airports

Charts showing the exact location and elevation of all obstructions around principal airports of the United States are being completed by the Coast and Geodetic Survey.

On a scale of one inch to each 1,000 feet, the maps show every obstacle extending above an approach glide angle of 40 to 1. They cover the area within three miles of each end of each runway.

The charts may be ordered at 40 cents each from Coast and Geodetic Survey, Washington 25, D. C. They are numbered the same as Approach and Landing Charts, except that the number is preceded by the letters "OP" instead of "AL". Charts of Love Field, Dallas; Army Air Forces Field, Galveston; and Wold-Chamberlain Field, Minneapolis, are ready for immediate mailing.

Obstruction plans for the following fields were expected to be available by April 1: National Airport, Washington, D. C.; Lambert, St. Louis; Long Beach Municipal; Indianapolis Municipal; Meacham, Fort Worth; International, Brownsville; Cliff Maus Municipal, Corpus Christi; and LaGuardia, New York.

New CAA Handbook with 1945 Aviation Statistics on Sale

A new edition of the "Statistical Handbook of Civil Aviation" has just been published by the CAA Office of Aviation Information and put on sale at the Government Printing Office for 25 cents.

First issued in October 1944, the Handbook now carries statistics for calendar year 1945, and covers additional subjects, including international and territorial air carrier operations. It contains 129 pages.

The Handbook is the first compilation in one volume of essential civil aviation statistics. Its contents include chapters on airports, airways, domestic air carrier operations and accidents, international and territorial operations and accidents, non-air-carrier flying operations and accidents, aircraft and airmen certifications, training programs, aircraft production and exports, and U.S. aviation firsts.

Owners of looseleaf copies of the first edition wishing to order the new handbook should specify to the Government Printing Office that they want the pages.

Change sheets will be issued by CAA during 1946 as required, and will be sent on request to the Office of Aviation Information.

Storm Causes Crash—Failure of the pilot to properly plan the flight and remain at a safe instrument altitude under existing conditions was given by a Civil Aeronautics Board report as the probable cause of the crash of an American Airlines plane in the Virginia mountains. The company's laxity in dispatching and supervising the flight was cited as a contributing cause.

Fifteen of the 19 passengers and both pilots were killed when the craft, en route from New York to Los Angeles, crashed on Glade Mountain near Rural Retreat, Va. Four passengers and the hostess were seriously injured and the plane demolished.

Surviving passengers testified that the plane had been passing through rain and clouds and encountering considerable turbulence for some time prior to the crash and that freezing rain fell soon after the accident.

The plane left Washington at 12:11 a.m. At 1:50 a.m. a radio message had been received and acknowledged by the Captain reclearing the flight on instruments from Tri-City to Smithville and contact flight rules from Smithville to Nashville. The plane's last radio message at 2:05 a.m., approximately 20 minutes before the crash, gave its position as 4000 feet over Pulaski, Va. The site of the crash was about 3910 feet above sea level.

Evidence would indicate that between 2:05 and the time the flight would have proceeded on an instrument flight plan at Tri-City, the airplane crashed while in normal cruising flight on its normal southwesterly course. This, the Board report stated, and the testimony of the passengers concerning weather conditions prior to the crash, would indicate that the Captain had neither turned the flight around nor proceeded to a safe altitude which would adequately clear the terrain existing along the Pulaski-Tri-City leg of the flight.

The Board report disclosed that evidence showed it had been customary for the company to dispatch night contact flights through this region at the 4000-foot altitude although it cannot be flown at 4000 feet if a 1000-foot clearance is to be maintained over all terrain for 5 miles to either side of the center of the airway.

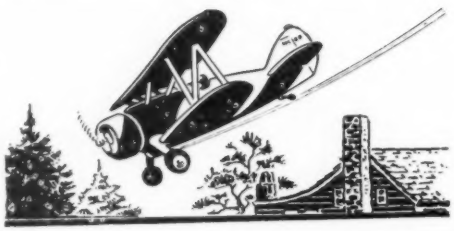
Capsizes in Rough Sea—The accident at Fort de France, Martinique, August 3, 1945, in which four passengers lost their lives, was probably caused by the attempt of the pilot to bring his craft down in water too rough for a flying boat according to findings of the Civil Aeronautics Board. Quick action by the crew saved six of the ten passengers before the plane sank in about 120 feet of water.

The plane, of Pan American airways, was on its way from Port of Spain, Trinidad, to San Juan, Puerto Rico, and when near Fort de France an attempted sea landing was made because of engine trouble.

Captain Sherrill Taft Shaw, 38, Miami, Fla., told the co-pilot Charles Thomas Hawkins, 24, Miami, Fla., he was afraid he would "lose" the left engine, and when near Fort de France determined to make an emergency landing. The pilot was alarmed by the size of the swells and attempted to take off, but the left engine failed and the bow submerged and the plane yawed, shearing off the left wing. The craft capsized.

Insufficiently current weather reports contributed to the accident. Pan American is dependent upon the French meteorological station for official reports on local weather. Also the Pan American ground personnel at the station were not alert to the existing hazardous weather and failed to advise the flight that a safe landing would be exceedingly difficult.

The Board also found that the company had not provided adequate or approved let-down procedures.



Another Reckless Boy—Arthur Furby Fox, 15, Beaumont, Tex., at one time employed at the airport, took a plane from the hangar telling the attendant he had been instructed to taxi it out for refueling. A few minutes later he was in the air and it was reported diving at houses in the neighborhood. He crashed in a timbered locality, near the airport, and was killed.

The boy had received 6 or 8 hours of dual instruction, but was not certified as a pilot because of age. The accident was caused by "low reckless flying."

Vigilance the Price of Safety—Lack of alertness on the part of the pilots of both aircraft is given as the probable cause of an air collision near the Chicago Municipal Airport in which two persons were killed, one plane destroyed and another seriously damaged.

The craft involved in the accident were a Transcontinental and Western airliner on the way from Chicago to Kansas City on a scheduled cargo run without passengers and a privately-owned plane on a local flight. Its pilot and his passenger were killed and the plane destroyed. The airliner, which was extensively damaged, was landed at the airport without injury to its two occupants.

The liner had left the Chicago airport on a scheduled cargo run without passengers and when about seven miles southwest collided with the private plane which had taken off from the Ravenswood, Ill., Airport with one passenger.

The upper right wing of the private plane was destroyed by the right wing of the airliner and the craft fell almost vertically to the ground. Both occupants were killed. Apparently neither attempted to jump although both were equipped with parachutes. Despite extensive damage to the leading edge of its right wing the airliner was landed at the Chicago Municipal Airport without further damage and without injury to either occupant.

Examination of the aircraft revealed that the right upper wing of the private plane had disintegrated before impact with the ground. The interplane strut fittings from both spars of this wing were found imbedded in the leading edge of the liner's right wing. Nothing was found to indicate malfunctioning of either plane prior to the collision.

Several persons who saw the two planes just before they collided testified that both were in straight, level flight, the airliner heading west and the other heading south. They stated they could see the planes distinctly, although there was a haze and the sky was overcast.

Captain L. N. Smith, who was piloting from the left seat, stated that after he leveled off at 2000 feet indicated altitude, he tuned the radio to Joliet in anticipation of shortly going on instruments and that his attention was divided equally inside and outside the cockpit. They had just crossed the southwest leg of the Chicago range and were on a heading of 260° when the First Officer, G. W. Reier, yelled, "Look out!" The Captain said he immediately started a left turn because he felt that any danger would be coming from the First Officer's side on the right. At that time he caught a glimpse of the other plane at the instant of impact. Reier stated that he had been looking at ground objects and that when he first saw the other aircraft it was approaching from his right at a 45° angle in a diving attitude. He said he called out and as the Captain lifted the right wing the other plane passed beneath it and he heard the crash almost simultaneously. Both Smith and Reier stated that the weather was hazy with visibility 2-4 miles, variable, and that ground objects were plainly visible. Neither would estimate the ceiling although both stated that they were beneath it at their alitude.

Frank Hodera, 31, who was pilot of the private plane, held a private certificate and had flown approximately 207 hours. He was a member of the Jefferson Park Flying Club and was authorized to fly the Club's aircraft. He carried as passenger Herman Albert Weber who was not certificated as an airman.

Airliner and Training Plane Collide—"Lack of vigilance" on the part of the crew of an American Airlines plane was cited by the Civil Aeronautics Board as the cause of a mid-air collision with a training plane near Saline, Mich. The airliner was landed successfully in a cornfield, despite major damage. No one was injured. The trainer was demolished, upon impact with the ground, but its two occupants had parachuted to safety.

Flight 21 was headed west—en route from New York to Chicago. As it passed the Willow Run Airport, at its assigned altitude of 2500 ft., the Captain made a radio report. Some traffic was expected at this point so he waited a minute or two before making the routine entries in his flight log. While making the entries, his attention was diverted momentarily from the flight path ahead.

At the same time, the First Officer, who was flying the airliner to Chicago, tuned the auxiliary receiver to the frequency of the next range station at Lansing. Leaning forward to line up the tuning dial, his upper limit of vision was increased and he saw a yellow plane coming from above. Startled, he involuntarily depressed the left wing to clear the approaching plane but almost simultaneously felt an impact.

The Captain immediately took over the controls but the left wing went down about 30° and continued downward despite his efforts to level it. With the right engine idling and the left engine operating at emergency power, the Captain and First Officer brought the craft level laterally, but altitude could not be maintained. Selecting a field he could reach by turning only a few degrees to the right, the Captain landed with wheels up and flaps down. The plane stopped after passing through three wire fences.

The other craft, a side-by-side trainer, was occupied by an instructor and his student. Both were at the controls. They were flying southwest at an altitude of from 2400 to 2500 ft. Since the craft was overtaken from the rear and left, only the student, seated on the left, could have seen the approaching airliner and to have done so would have required looking backwards.

Flew Too Low—The probable cause of the accident in which 17 passengers and three crew members of a Pennsylvania-Central Airlines plane were killed near Morgantown, W. Va. April 14, 1945, is given by the Civil Aeronautics Board as flying below the authorized safe minimum altitude authorized for instrument operation.

The plane which crashed into Cheat Mountain, W. Va., was on its way from Pittsburgh to Birmingham.

Captain Harold Houston Jones, 32, Alexandria, Va., was in command and the first officer was William Thomas Repack, 29, McKees Rocks, Pa.

Airline Orders

Service

No. 4533 rescinds order No. 1678 which temporarily suspended service on Pennsylvania-Central Airlines' route 41. (Feb. 26.)

No. 4534 rescinds order No. 1761 insofar as it authorized United Air Lines to temporarily suspend service at Iowa City, Iowa, on route 1. (Feb. 27.)

No. 4535 rescinds order No. 4307 which allocated to certain air carriers the number of landing rights made available by the Government of the United Kingdom of Great Britain and Northern Ireland. A Bilateral Air Transport Agreement, between the U. S. and the United Kingdom, places no limitation on the number of frequencies which may be operated to and from the United Kingdom. (Feb. 27.)

No. 4536 grants petition of Alaska Airlines for permission to intervene in the application of Circle Air Trails for a permanent certificate. (Feb. 28.)

No. 4537 grants petition of Alaska Airlines for permission to intervene in the application of Larson Alaskan Distributing Co. for a permanent certificate. (Feb. 28.)

No. 4538 amends "Approved Service Plan—Foreign Air Transportation" of American Overseas Airlines, Inc. so as to include Frankfurt am Main, Germany, as an intermediate point on the Stockholm-Berlin segment. (Feb. 28.)

No. 4541 amends "Approved Service Plan—Foreign Air Transportation" of American Overseas Airlines so as to substitute Oslo, Norway for Stavanger, Norway, as an intermediate point on its approved service plan. (Mar. 1.)

No. 4542 denies petition of the Chamber of Commerce of Rockford, Ill. for leave to intervene in the Great Lakes Area Case. (Mar. 1.)

No. 4543 consolidates American Airlines' application for extension of route 23, from Nashville, Tenn., to New Orleans, La., via Meridian, Miss., and application of Pennsylvania Central Airlines (Docket 1731), into the Boston-New York-Atlanta-New Orleans Case. Permits the Commonwealth of Mass., Baltimore Aviation Commission, Greensboro-High Point Airport Authority, Orleans Airport Commission of New Orleans, Port of New York Authority, Department of Justice, TWA, Braniff, the Cities of Asheville, N. C., Cincinnati, Ohio, Hattiesburg, Miss., and Philadelphia, permission to intervene in the proceeding. Denies the Baltimore Association of Commerce and the Chamber of Commerce and Board of Trade of Philadelphia permission to intervene in the proceeding. (Mar. 1.)

No. 4544 denies petition of the Chamber of Commerce and Board of Trade of Philadelphia for permission to intervene in the Boston-New York-Atlanta-New Orleans Case. (Mar. 1.)

No. 4545 denies petition of Chamber of Commerce and Board of Trade of Philadelphia for permission to intervene in the application of Pan American Airways—Docket 1803. (Mar. 1.)

No. 4548 permits Mid-Continent Airlines to begin service on March 15 to Mason City, Iowa. (Mar. 5.)

No. 4549 permits Delta Air Lines to inaugurate on March 6, nonstop service between Chicago, Ill. and Atlanta, Ga., on Route 54. (Mar. 5.)

No. 4550 permits Southwest Airways Co. to intervene in the application of Arizona Airways, Inc. and Transcontinental and Western Air—Docket 2005. (Mar. 5.)

No. 4551 permits the State of South Dakota to intervene in the North Central Case—Docket 415 et al. (Mar. 5.)

No. 4552 temporarily exempts Pan American Airways from the provisions of sec. 401 of the Act insofar as they would prevent Pan Am from engaging in air transportation between the intermediate point Guatemala City, Guatemala, and the terminal point New Orleans, La., via the intermediate point Merida, Mexico, between March 12 and until final action is taken on Pan Am's application—Docket 1157. (Mar. 6.)

No. 4553 permits Continental, Mid-Continent and American Airlines to intervene in the application of Braniff Airways, Inc., et al., for amendment of its certificate—Docket 1154 et al. (Mar. 6.)

No. 4554 permits United Air Lines to inaugurate immediately, non-stop service between Ogden, Utah and Elko, Nev., on route 1. (Mar. 6.)

No. 4555 permits United Air Lines to inaugurate on Mar. 1, non-stop service between Salem, Ore. and San Francisco, Calif., on route 11. (Mar. 6.)

No. 4556 permits Pennsylvania-Central Airlines to inaugurate immediately, non-stop service from Baltimore, Md. to Akron, Ohio on route 14. (Mar. 6.)

No. 4557 permits United Air Lines to inaugurate on Mar. 1, non-stop service between Chicago, Ill., and Iowa City, Iowa, on route 1. (Mar. 6.)

No. 4558 permits Wien Alaska Airlines to intervene in the application of Toussaint Air Service for a certificate—Docket 1927. (Mar. 7.)

No. 4559 permits Delta Air Lines to inaugurate on March 6, non-stop service between Atlanta and Savannah, Ga., on route 24. (Mar. 7.)

No. 4560 denies application of All American Aviation for an exemption from the provisions of sec. 401 of the Act. (Mar. 7.)

No. 4561 permits the Cities of Columbus, Ga. and Tupelo, Miss., and Muscogee County, Ga., to intervene in the Kansas City-Memphis-Florida Case. (Mar. 8.)

No. 4562 orders that Western Air Lines be notified that the national defense no longer requires delaying inauguration of service between Los Angeles, Calif. and Denver, Colo. (Mar. 8.)

No. 4563 dismisses application of American Overseas Airlines (Docket 2165) for an exemption from the provisions of sec. 401 of the Act (Mar. 8.)

No. 4564 dismisses petition of Pan American to intervene in applications of American Overseas Airlines. (Dockets 2165 and 2211.) (Mar. 8.)

No. 4565 grants United Air Lines leave to intervene in the application of Arizona Airways and Trancontinental and Western Air under sections 408(b) and 401(j) of the Act. (Mar. 11.)

No. 4576 grants petitions of the Port of New York Authority and Orleans Airport Commission for leave to intervene in the application of Lineas Aereas Taca de Colombia, S. A., for a foreign air carrier permit. (Mar. 12.)

No. 4577 rescinds orders 1750 and 1772 which concerned temporary suspension of certain service by American Airlines. (Mar. 12.)

No. 4578 permits United Air Lines to inaugurate immediately non-stop service between Rock Springs, Wyo. and Salt Lake City, Utah on route 1. (Mar. 12.)

No. 4579 dismisses applications of Angeline Harris, Docket 898, and Mountain Airways Co., Docket 1122. (Mar. 12.)

No. 4583 grants American, Braniff, Chicago and Southern, Delta, Eastern, National, Northwest, Pennsylvania-Central, Transcontinental and Western Air, United, Western Air lines, and Orleans Airport Commission of the City of New Orleans leave to intervene in the application of Pan American Airways for a certificate—Docket 1803. Denies motions of Braniff, Delta, and Pennsylvania-Central for postponement of further steps in this proceeding and requesting severance of certain portions of the application and assignment for hearing with other pending applications.

No. 4584 grants petition of Pan American Airways for leave to intervene in the application of Lineas Aereas Taca de Colombia, S. A. for a foreign air carrier permit—Docket 1824. (Mar. 12.)

No. 4586 denies petition of Norseman Air Transport (an applicant in The New England Case) for reconsideration of the Board's ruling which denied Norseman's petition for rehearing. (Mar. 13.)

No. 4587 permits Eastern Airlines to inaugurate immediately, non-stop services between Cleveland, Ohio and Greensboro-High Point, N. C. and between Winston-Salem, N. C. and Savannah, Ga. and Cleveland, Ohio, on route 6. (Mar. 12.)

No. 4588 grants the City of Valdosta, Ga., permission to intervene in the Kansas City-Memphis-Florida Case—Docket 1051 et al. (Mar. 13.)

No. 4591 grants petitions of Eastern Air Lines and Pan American Airways for leave to intervene in the application of Taca, S. A., for a foreign air carrier permit. (Mar. 14.)

No. 4592 permits Pan American Airways to inaugurate service on March 15 to New Orleans, La. (Mar. 15.)

No. 4593 permits Pan American to inaugurate service on March 6 to Los Angeles, Calif., through the use of Lockheed Air Terminal at Burbank. (Mar. 15.)

No. 4596 dismisses application of Central U. S. Airlines for certificates. (Mar. 18.)

No. 4597 dismisses application of North Coast Airlines for certificates. (Mar. 18.)

Miscellaneous

No. 4539 grants petition of Eastern Airlines for leave to intervene in the investigation of certain activities of Page Airways, Inc.—Docket 1896. (Mar. 1.)

No. 4540 disapproves acquisition of control of Caribbean-Atlantic Airlines by National Airlines. Orders the return to Caribbean's stockholders of the shares deposited by them with National and restoration of Caribbean's former status. Disapproves agreement for leasing aircraft and furnishing personnel by National to Caribbean. (Issued with an opinion—Mar. 1.)

No. 4547 approves an agreement by and between Pan American, American Overseas Airlines, Transcontinental and Western Air and Douglas Aircraft Co. relating to conversion of C-54 aircraft. (Mar. 5.)

No. 4589 approves an agreement by and between Northeast Airlines and United Air Lines relating to the sublease of space to United in the Administration Building, Logan Airport, Boston, Mass. (Mar. 13.)

No. 4590 directs The Aviation Corp., American Airlines and Consolidated-Vultee Aircraft Corp. to show cause, on or before March 25, why the Board should not issue a supplemental order to its previous order, No. 4153, prohibiting the consummation of a contract, relating to the purchase of aircraft, as well as any other commercial transactions, between American and The Aviation Corp., Consolidated-Vultee or any other person or corporation controlled by The Aviation Corp., prior to compliance by the Aviation Corp. with the divestiture order No. 4153. (Mar. 11.)

No. 4595 rescinds Part 2 of the Statement of Tentative Findings and Conclusions served with order 3705. Denies Pan American's motion of August 14, 1945 to withhold from public disclosure its answer to Part 2. (Mar. 15.)

No. 4601 orders that Eastern Air Lines preserve certain accounts, records and memoranda concerning air transportation on flights 18 and 22 for Jan. 20, 1946. (Mar. 18.)

No. 4603 denies petition for dismissal of the proceeding concerning an agreement by and between Pan American Airways, Inc., and Panair Do Brasil, S. A., relating to the furnishing of certain facilities and services to Pan American. Denies request to present oral argument thereon. Orders all further proceedings be withheld from public disclosure until further order of the Board. (Mar. 20.)

Airman Orders

Suspensions

No. 4567 suspends commercial certificate of Eugene H. Akers for 6 months because he flew an aircraft acrobatically over a congested area of Memphis, Tenn. in violation of sec. 61.101 of the Civil Air Regulations. (Mar. 12.)

No. 4569 suspends private certificate of Clair E. Fitz until July 19, 1946 because he flew at an altitude of 75 feet above the ground. While attempting to communicate with people on the ground, he slowed the speed of the aircraft failing to see a hill in its path. When he suddenly raised the nose of the craft to avoid the hill, it stalled and crashed. (Mar. 12.)

No. 4571 suspends student certificate of David T. Porter for 6 months because he flew at such a dangerously low altitude the craft collided with a truck. (Mar. 12.)

No. 4573 suspends private certificate of Joseph W. Rosenfield, Jr. for 6 months because he flew below 500 feet over a congested area, contrary to the provisions of sec. 60.104(b) of the Regulations. (Mar. 12.)

No. 4574 suspends commercial certificate of Richard E. Ryan for 20 days because he flew at an altitude of 50 to 100 feet and 20 yards horizontally from a group of golfers on the fairway of the Rochester Golf and Country Club at Rochester, Minn. while making an approach for dragging a field adjacent to the golf course, contrary to the provisions of sec. 60.105(b) of the Regulations. (Mar. 12.)

No. 4580 suspends commercial certificate of Bernard Zipperstein until Apr. 5, 1946 because he flew at less than 1,000 feet over a congested area, contrary to the provisions of sec. 60.3500 of the Regulations. Zipperstein delivered his certificate to a Board examiner on Jan. 5, 1946. (Mar. 12.)

No. 4582 suspends commercial certificate of Norval R. Mathie for 90 days because he flew acrobatically over a congested part of Lakewood, Ohio, contrary to the provisions of sec. 60.104(b) of the Regulations. (Mar. 12.)

No. 4585 suspends commercial certificate of Jesse B. Wofford for 30 days because he piloted his aircraft at an altitude of less than the minimums prescribed in sec. 60.105 of the Regulations. (Mar. 13.)

No. 4594 amends order No. 4174 so as to suspend the commercial certificate of Robert W. Bosse until May 9, 1946. Previously this order (No. 4174) revoked his certificate. (Mar. 15.)

No. 4599 suspends private certificate of Leroy A. Stacey for 90 days because he flew at night without a set of certificated forward and rear position lights, contrary to the provision of sec. 43.30 of the Regulations. Stacey also violated other provisions of the Regulations. (Mar. 18.)

No. 4600 suspends commercial certificate of Marshall B. Potts for 90 days because he flew at night without a set of certificated forward and rear position lights, contrary to the provision of sec. 43.30 of the Regulations. Potts also violated other provisions of the Regulations. (Mar. 18.)

No. 4602 amends order No. 4316 so as to suspend Ralph Cummins' student certificate until July 2, 1946. Previously this order (No. 4316) had revoked his certificate. (Mar. 19.)

Revocations

No. 4424 revokes private certificate of Theodore H. Robinson because he dived and zoomed, at altitudes of not more than 400 ft., over the South Highland section of Shreveport, La., and abruptly altered the speed of his plane by advancing and retarding the throttle, contrary to the provisions of sec. 60.101 of the Civil Air Regulations. (Jan. 26)

No. 4425 revokes student certificate of Alex J. Esselman because he piloted a plane between Green Bay and West Bend, Wis., and carried a passenger, in violation of sec. 43.59 of the Regulations. (Jan. 26)

No. 4440 revokes commercial certificate of Elsworth Q. Boomer because he flew at altitudes varying from 20 to 100 ft., diving below roof-top levels of buildings and over the heads of an assembly of persons, in violation of sec. 60.101 of the Regulations. (Jan. 26)

No. 4444 revokes private certificate of Lawrence Everett Williams because while holding a student certificate he piloted an aircraft and carried a passenger. (Jan. 28)

No. 4452 revokes airman certificate of Willis W. Snyder because while piloting an aircraft near the airport at Robbinsdale, Minn., he collided in mid-air with another aircraft, the pilot of which was fatally injured. Snyder also violated sections 60.350, 60.3503, 60.31, 01.12, 20.73(a), and 60.343 of the Civil Air Regulations. (Feb. 1)

No. 4476 revokes student certificate of William E. Taylor because he carried a passenger. (Feb. 5)

No. 4477 revokes student certificate of Glen E. Smith because he carried a passenger. (Feb. 5)

No. 4479 revokes student certificate of Johnny B. Pettey, Jr., because he piloted an aircraft recklessly in the vicinity of Vero Beach, Fla., buzzing, diving and zooming at altitudes varying from 30 to 400 ft., over the heads of persons bathing, contrary to the provisions of sec. 60.101, 60.105 and 60.104 (b) of the Regulations. (Feb. 5)

No. 4480 revokes student certificate of Daniel S. Wood because he flew an aircraft between Plainfield and Danielson, Conn., outside the local flying area designated by his flight instructor, when he did not have at least 10 solo flight hours, and had not passed a written exam and when his student certificate was not appropriately endorsed for such flight, contrary to the provisions of sec. 43.52 of the Regulations. (Feb. 5)

No. 4488 revokes student certificate of Wm. Spratt because he carried a passenger. (Feb. 8)

No. 4489 revokes private certificate of John S. Steber because he referred to notes while taking an exam for a commercial pilot certificate. (Feb. 8)

No. 4566 revokes commercial certificate of Bernard L. Barber because he flew at less than 500 feet, struck a high tension power line whereupon the aircraft was completely demolished, his passenger killed and Barber injured. (Mar. 12.)

No. 4568 revokes student certificate of Mervin F. Elmore because he carried a passenger, contrary to the provisions of sec. 43.50 of the Regulations. (Mar. 12.)

No. 4570 revokes student certificate of James E. Fahnauer because he flew in a reckless manner, endangering the lives of others, contrary to the provisions of sec. 60.101 of the Regulations. (Mar. 12.)

No. 4572 revokes student certificate of James H. Christie because he flew at less than 500 ft., contrary to the provisions of sec. 60.3503 of the Regulations and also violated the provisions of sec. 20.720. (Mar. 12.)

No. 4575 revokes student certificate of William G. Buckmaster because he carried a passenger and also violated sections 43.52 and 60.105(a) of the Regulations. (Mar. 12.)

No. 4581 revokes private certificate of Joseph Beckham Haga because he gave flying instruction for hire contrary to sec. 20.80 of the Regulations. (Mar. 12.)

Miscellaneous

No. 4484 denies petition of Dorothy J. Allen for reconsideration of the Board order which revoked her commercial certificate. (Jan. 28)

No. 4496 denies request of Roy J. Carver, who holds a commercial certificate, for oral argument. (Feb. 8.)

No. 4497 denies request of Earl T. Lamons, who holds a private certificate, for oral argument. (Feb. 8.)

No. 4546 denies request of Frank H. Werner for reconsideration of the Board's order of revocation dated Aug. 24, 1945. (Mar. 4.)

No. 4598 orders that the Board, on its own motion, start an investigation relating to the period of time during which pilots engaged in air carrier operations may be on duty in the various types of equipment and operations now being conducted and which are anticipated in the immediate future so as to determine what limitations on hours of duty are required to insure the highest degree of safety in air carrier operations. (Mar. 18.)

Regulations

Amdt. 27–3 . . . . . *Effective Feb. 15, 1946*

Dispatcher Aeronautical Experience—§ 27.15 of the Civil Air Regulations is amended to read as follows:

27.15 Aeronautical experience.

(a) Applicant shall have served in scheduled air carrier or

(See CAB Actions, page 48)

CAA Approves New Types; Adds New Models to Old

The following new type aircraft, propellers, and engines have been approved by the CAA. In addition, new models have been added to previously type certificated aircraft, engine, propellers and appliances. Approval numbers and dates of approval appear in parenthesis.

New Types

Aircraft—

Consolidated-Vultee, Stinson Division, models L-5, L-5B, L-5C, L-5D, L-5E, L-5E-1; 2 place closed land monoplane. Engine Lycoming 0-435-C. (Type Certificate No. 764, 12-17-45.)

Propellers—

Sensenich, model 76RM; wood; 76 in. diameter; 47 in. to 37 in. pitch; 110 hp, 2600 rpm. (Type Certificate No. 834, 1-4-46.)

Canadian Car & Foundry, model P44E500 propeller with P45D456 blades; steel hub with wood blades; 7′ 0″ diameter; hydraulically controllable pitch; 200 hp, 2550 rpm. (Type Certificate No. 835, 1-21-46.)

Sensenich, model C3FC3 propeller with CU37B-76 blades; steel hub with wood blades; 76 in. diameter; hydraulically controllable pitch; 125 hp, 2600 rpm. (Type Certificate No. 836, 2-28-46.)

Engines—

Wright, model Cyclone 736C9HD1, 2, 3, and 4; 9 cyl. radial aircooled. Rated 1425 hp at 2700 rpm for take-off in low ratio supercharger at sea level and 1250 hp in high ratio supercharger at 10800 ft.; 1275 hp at 2500 rpm from sea level to 3500 ft. for maximum, except take-off, in low blower, and 1125 hp at 2500 rpm to 10600 ft. in high ratio supercharger. Dry weight 1360 lbs. without torquemeter, and 1365 lbs. with torquemeter. Uses Grade 100 Aviation fuel. (Type Certificate No. 243, 2-12-46.)

Wright, model Cyclone 737C9HD1, 2, 3, and 4, same as above models (736C9HD) except its high ratio supercharger ratings are 975 hp at 2500 rpm from 12000 ft. to 18300 ft. (Type Certificate No. 243, 2-12-46.)

New Models

Aircraft—

Douglas, model DC3C-R-1830-90C (Army C-47B, Navy R4D-6), 28 place closed land monoplane. Engines, 2 P & W Twin Wasps R-1830-90C, spline coupled, 16.9 reduction gear with one 3½ N damper. (Type Certificate No. 669, 1-15-46.)

Douglas, model DC3D-R-1830-90C (Army C-117A); 25 place closed land monoplane. Engines 2 P & W Twin Wasps R-1830-90C, spline coupled, 16.9 reduction gear with one 3½ N damper. (Type Certificate No. 669, 1-15-46.)

Commonwealth, model 185; 2 place closed land monoplane. Engine, Continental C85-12. (Type Certificate No. 729, 2-12-46.)

Taylorcraft, model BC12-D; 2 place closed land monoplane. Engine, Continental A-65-7. (Type Certificate No. 696, 11-23-45.)

Taylorcraft, model BCS12-D, 2 place closed sea monoplane. Engine, Continental A-65-7. (Type Certificate No. 696, 2-19-46.)

Engines—

Aviation Corporation, model Lycoming 0-235-C; 4 cyl. horizontally opposed aircooled. Rated 100 hp at 2600 rpm at sea level for all operations. Equipped optionally for starter and generator. Weight (dry) 224 lbs. (Type Certificate No. 223, 1-3-46.)

Pratt & Whitney, model Wasp Jr. B-5; 9 cyl. radial aircooled. Rated; 450 hp. 2300 rpm, 37 in. Hg. for take-off and maximum, except take-off, at sea level; 450 hp. 2300 rpm. 36.5 in. Hg. at 2300 ft. Weight (dry) 684 lbs. (Type Certificate No. 123, 1-14-46.)

Wright, model Cyclone 702C9GC4, 5, and 6; 9 cyl. radial aircooled. Similar to models 702C9GC1, 2, and 3 in ratings. Model 4 has a high ratio generator drive and models 5 and 6 have 16:9 propeller reduction gearing with model 6 having a torquemeter. (Type Certificate No. 219, 2-28-1946.)

Propellers—

Sensenich model 74RA; wood; 74 in. diameter; 70 in. to 62 in. pitch; 150 hp, 2600 rpm. (Type Certificate No. 789, 1-8-46.)

Continental, model PA-108A propeller with 735-203-PA blades; steel hub with wood blades; 6 ft. 2 in. diameter; hydraulically controllable two-position; 85 hp, 2575 rpm. (Type Certificate No. 831, 2-18-46.)

Flottorp, model 74C; wood, 74 in. diameter; 62 in. to 48 in. pitch; 130 hp, 2550 rpm. (Type Certificate No. 754, 2-26-46.)

Sensenich, model 72CK; wood; 72 in. diameter; 50 in. to 40 in. pitch; 65 hp, 2350 rpm. (Type Certificate 691, 2-28-46.)

Sensenich, model 74RR; wood; 74 in. diameter; 70 in. to 62 in. pitch; 150 hp, 2600 rpm. (Type Certificate 789, 2-27-46.)

Sensenich, model 102CA; wood; 102 in. diameter; 62 in. to 53 in. pitch; 225 hp, 2100 rpm. (Type Certificate No. 546, 2-28-46.)

Sensenich, model 86CB; wood; 86 in. diameter; 70 in. to 61 in. pitch; 200 hp, 2450 rpm. (Type Certificate No. 654, 2-28-46.)

Sensenich, model 86BB; wood; 86 in. diameter; 63 in. to 51 in. pitch; 200 hp, 2450 rpm. (Type Certificate No. 586, 2-27-46.)

Sensenich, model 85LYA; wood; 85 in. diameter; 61 in. to 52 in. pitch; 190 hp, 2550 rpm. (Type Certificate No. 586, 2-27-46.)

Sensenich, model 44K15005; wood; 85 in. diameter; 59 in. pitch; 190 hp, 2550 rpm. (Type Certificate No. 586, 2-27-46.)

Appliances—

Goodyear, Type III (low pressure) wheels, model LF6H/MBD; 6.00-6. Approved static load per wheel 1200 lbs. (Type Certificate No. 37, 1-2-46.)

Firestone, Type III (low pressure) wheels, models DFA216 and DFA221; 7.50-10. Approved static load per wheel 2800 lbs. (Type Certificate No. 163, 1-3-46.)

Hayes, Type III (low pressure) wheels, models 6050A, 6050M and 6051A, 6051M; 7.00-8. Approved static load per wheel 1600 lbs. (Type Certificate No. 10, 1-4-46.)

AIR REGULATIONS . . . As of April 1, 1946

Title	Part No.	Price		Date Latest Edition		No. Amendments Issued	
		Part	Manual	Part	Manual	Part	Manual
Aircraft							
Airworthiness Certificates	01	$0.05	None	10/15/42	None	1	.....
Type and Production Certificates	02	.05	$0.10	3/1/41	3/15/45	.....	.....
Airplane Airworthiness—Normal, Utility, Acrobatic, and Restricted Purpose Categories	03 [1]	Free	None	11/13/45	None	.....	.....
Airplane Airworthiness	04	.15	.45	11/1/43	7/1/44	3	1
Airplane Airworthiness Transport Categories	04-0 [1]	Free	None	11/9/45	None	.....	.....
Engine Airworthiness	13	.05	None	8/1/41	None	.....	.....
Propeller Airworthiness	14	.05	No stock	7/15/42	6/1/45	1	.....
Equipment Airworthiness	15	Free	No stock	4/15/44	7/1/38	1	.....
Radio Equipment Airworthiness	16	.05	No stock	2/13/41	2/13/41	.....	1
Maintenance, Repair, and Alteration of Aircraft, Engines, Propellers, Instruments	18	.05	.50	9/1/42	6/1/43	.....	.....
Airmen							
Pilot certificates	20	.05	None	7/1/45	None	2	.....
Airline Pilot Rating	21	.05	None	10/1/42	None	3	.....
Lighter-than-air Pilot Certificates	22	.05	None	10/15/42	None	1	.....
Mechanic Certificates	24	.05	None	7/1/43	None	1 [2]	.....
Parachute Technician Certificates	25	.05	None	12/15/43	None	1	.....
Traffic Control Tower Operator Certificates	26	.05	None	10/10/45	None	.....	.....
Aircraft Dispatcher Certificates	27	.05	None	10/1/43	None	3 [3]	.....
Physical Standards for Airmen	29	.05	None	1/10/46	None	.....	.....
Operation Rules							
Air Carrier Operating Certification	40	.10	None	10/10/44	None	2 [4]	.....
Scheduled Air Carrier Operations Outside Continental U. S.	41	Free	None	9/1/45	None	1	.....
General Operation Rules	43	.05	None	7/1/45	None	5	.....
Foreign Air Carrier Regulations	44	.05	None	7/1/45	None	.....	.....
Transportation of Explosives and other Dangerous Articles	49	.05	None	7/1/45	None	.....	.....
Air Agencies							
Flying School Rating	50	.05	Free	1/15/46	4/1/46	.....	2
Ground Instructor Rating	51	.05	None	12/15/43	None	1	.....
Repair Station Rating	52	.05	Free	10/1/42	2/41	.....	.....
Mechanic School Rating	53	.05	No stock	8/1/42	5/40	.....	.....
Parachute Loft Certificates and Ratings	54	.05	None	1/21/43	None	.....	.....
Air Navigation							
Air Traffic Rules	60	.05	.15	8/1/45	10/45	1 [5]	.....
Scheduled Air Carrier Rules	61	.10	None	2/1/44	None	6 [6]	.....
Miscellaneous							
Rules of Practice Governing Suspension and Revocation Proceedings	97	Free	None	7/6/45	None	.....	.....
Definitions	98	.05	None	10/15/42	None	.....	.....
Mode of Citation	99	Free	None	11/15/40	None	.....	.....
Regulations of the Administrator							
Aircraft Registration Certificates	501	Free	None	3/31/43	None	.....	.....
Recordation of Aircraft Ownership	503	Free	None	3/31/43	None	.....	.....
Notice of Construction or Alteration of Structures on or near Civil Airways	525	Free	None	7/23/43	None	.....	.....
Seizure of Aircraft	531	Free	None	12/8/41	None	.....	.....
Reproduction and Dissemination of Current Examination Materials	532	Free	None	1/15/43	None	.....	.....

[1] Certain aircraft may comply with the provisions of this part or the 11/1/43 edition of Part 04. [2] Special regulations 340 and 340A. [3] Special regulation 355. [4] Special regulations 319, 319C and 361. [5] Special regulation 361. [6] Special regulations 323A, 323B and 361.

Note: Those parts and manuals for which there is a price are obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Remittances should be by check or money order, payable to the Superintendent. Currency is sent at sender's risk. Amendments and free Parts are obtained from the Publications Section, Civil Aeronautics Board, Washington 25, D. C.; free Manuals and Regulations of the Administrator from the CAA Office of Aviation Information, Dept. of Commerce, Washington 25, D. C.

Northwest Air Service, skis, models G-4000, G-6500, GS-5000A, GS-5000B. Approved static load per ski 2000 lbs., 3250 lbs., 2500 lbs., and 2500 lbs., respectively. (Type Certificate No. 158, 1-29-46.)

Switlik Parachute Co., safety belt, model CA-2, approved for 1 person. (Type Certificate No. 98, 1-31-46.)

Federal, skis, models A-2500 and A-3500. Approved static load per ski 1250 lbs. and 1750 lbs., respectively. (Type Certificate No. 82, 2-6-46.)

Goodyear, Type III (low pressure) wheels, model L6.50-8HBDM; 6.50-8. Approved static load per wheel 1400 lbs. (Type Certificate No. 37, 2-8-46.)

Russell, safety belts, model AE-310 and AE-610, approved for 2 persons. (Type Certificate No. 90, 2-15-46.)

Goodyear, Type I (smooth contour) wheels, model 47 in. SC; 47 in. Approved static load per wheel 14,000 lbs. (Type Certificate No. 152, 2-11-46.)

Airworthiness Certificates Only

Canadian Vickers, model Stranraer; 3 place closed flying boat biplane. Engines, 2 Bristol Pegasus XXII. (2-574, 10-15-45.)

North American, models BC-1A and AT-6; 2 place closed land monoplane. Engine, Military model R-1340-47, -49, -AN-1. (2-575, 11-6-45.)

Stearman, model B; 2 place closed land monoplane. Engine, Continental A-75-9J. (2-580, 11-15-45.)

Noorduyn, Army UC-64, UC-64A, UC-64B, 8 place closed land monoplane. Engine, Pratt and Whitney Military Model R-1340-AN-1. (2-578, 1-25-46.)

North American AT-6A (Navy SNJ-3), Army AT-6B, AT-6C (Navy SNJ-4), 2 place closed land monoplane. Engine, Pratt and Whitney Military Model R-1340-47, R-1340-49 or R-1340-AN-1. (2-575, 2-1-46.)

CAB Actions

(Continued from page 47)

scheduled military operations for 2 of the immediately preceding 3 years as:

(1) a pilot member of the crew; or (2) a flight radio operator or ground radio operator; or (3) a flight navigator; or (4) a meteorologist in a dispatch organization dispatching aircraft; or (5) a technical supervisor of aircraft dispatchers; or (6) an assistant in dispatching of scheduled military aircraft; or

(b) Applicant shall have served for 2 of the immediately preceding 3 years as an air traffic controller; or

(c) Any combination of experience in (a), or in (a) and (b), provided each is at least one year; or

(d) Applicant shall have served as an assistant in the dispatching of scheduled air carrier aircraft under the supervision of a certificated aircraft dispatcher for at least one year within the immediately preceding 2 years; or

(e) Applicant shall be a graduate of an aircraft dispatcher course approved by the Administrator; and

(f) Applicants qualifying under (a), (b), (c), (d), or (e) above shall have served in connection with the dispatching of air carrier aircraft under the supervision of a certificated dispatcher for at least 90 days within the 6 calendar months immediately preceding application.

Amdt. 43-4 ..... *Effective Feb. 15, 1946*

Aircraft Certification and Identification—§ 43.102 (b) of the Civil Air Regulations is amended to read as follows:

43.102 Identification marks. * * * * * (b) **NR.** Roman capital letters NR followed by the registration symbols shall be

(See CAB Actions, page 51)

Domestic Air Carrier Statistics

Operations for January 1946

Prepared from official reports submitted by the air carriers listed, to the Civil Aeronautics Board

Operator and routes	Revenue miles flown	Revenue passengers carried [1]	Revenue passenger-miles flown	Express and freight carried (tons)	Ton-miles flown		Passenger seat-miles flown	Revenue passenger load factor (percent)
					Express	Freight		
All American Aviation, Inc., Pittsburgh-Huntington, Jamestown, Williamsport, Harrisburg, Philadelphia—**Total**	**129,328**	–	–	**2.0**	**288**	–	–	–
American Airlines, Inc.—Total	**4,455,684**	**128,943**	**76,976,392**	**826.0**	**227,745**	**168,285**	**85,695,250**	**89.83**
Dallas-Los Angeles	1,512,128	28,100	26,220,601	116.0	51,628	55,540	28,938,707	90.61
Boston-Cleveland; New York-Chicago	671,048	29,216	11,540,641	228.0	66,670	24,619	13,069,090	88.30
Boston-New York	278,268	31,467	5,298,922	105.0	13,685	2,316	6,205,826	85.39
Cleveland-Nashville	88,200	6,359	1,538,606	45.0	4,208	2,347	1,764,678	87.19
New York-Ft. Worth or Oklahoma City	1,227,850	33,154	20,660,407	202.0	59,856	46,565	22,662,711	91.16
Washington-Chicago	149,254	6,658	2,516,775	33.0	9,554	3,691	2,887,833	87.15
Chicago-Ft. Worth	305,379	10,228	5,428,088	60.0	9,075	21,326	5,973,039	90.88
Buffalo-Toronto	10,764	1,841	126,684	2.0	117	–	222,939	56.82
El Paso or Ft. Worth-Mexico City	212,793	4,251	3,645,668	35.0	12,952	11,881	3,970,427	91.82
Braniff Airways, Inc.—Total	**833,553**	**34,239**	**14,280,310**	**93.5**	**35,384**	**2,791**	**16,777,979**	**85.11**
Chicago-Dallas	396,378	12,692	6,952,251	40.8	23,313	2,250	7,807,852	89.04
Denver-Brownsville; Amarillo-Memphis	402,743	21,075	6,701,715	38.5	10,959	352	8,233,306	81.40
Houston-Nuevo Laredo or Corpus Christi	34,432	3,350	626,344	14.2	1,112	189	736,821	85.01
Chicago & Southern Air Lines, Inc.—Total	**532,030**	**20,914**	**8,449,622**	**72.4**	**26,095**	–	**11,083,289**	**76.24**
Chicago-New Orleans	297,616	12,975	4,838,053	45.5	16,201	–	6,199,699	78.04
Detroit-Houston	234,414	10,265	3,611,569	26.9	9,894	–	4,883,590	73.95
Continental Air Lines, Inc.—Total	**343,632**	**11,916**	**4,682,999**	**11.4**	**3,803**	**665**	**7,042,313**	**66.50**
Denver-El Paso-San Antonio	209,957	7,867	2,772,547	6.9	2,297	80	4,293,576	64.57
Pueblo-Tulsa	33,211	1,778	478,150	.9	156	21	697,018	68.60
Denver-Kansas City	100,464	3,004	1,432,302	3.6	1,350	564	2,051,719	69.81
Delta Air Corporation—Total	**656,153**	**27,612**	**11,168,410**	**61.0**	**29,385**	–	**13,850,232**	**80.64**
Charleston or Savannah-Ft. Worth	451,294	21,555	7,576,025	32.0	12,644	–	9,535,317	79.45
Chicago-Miami	204,859	8,245	3,592,385	29.0	16,741	–	4,314,915	83.26
Eastern Air Lines, Inc.—Total	**2,768,922**	**92,331**	**48,889,745**	**337.6**	**214,153**	**12,210**	**56,261,867**	**86.90**
Boston-San Antonio or Brownsville	795,846	28,873	13,458,866	90.4	53,971	2,773	16,393,733	82.10
Boston or Detroit-Miami	1,202,952	40,102	20,837,840	152.9	108,206	9,437	23,990,949	86.86
Chicago-Jacksonville	395,420	18,144	7,482,990	47.4	26,594	–	8,151,682	91.80
Atlanta-Miami; Tallahassee-Memphis	228,969	11,539	4,199,825	28.5	15,777	–	4,715,391	89.07
Washington-St. Louis	145,735	7,447	2,910,224	18.4	9,605	–	3,010,112	96.68
Essair, Inc., Houston-Amarillo—**Total**	**60,131**	**809**	**246,059**	**.4**	**102**	–	**541,179**	**45.47**
Inland Air Lines, Inc.—Total	**153,867**	**5,190**	**1,506,219**	**3.9**	**953**	–	**2,385,206**	**63.15**
Denver-Great Falls	108,065	4,008	1,162,648	3.3	820	–	1,860,535	62.49
Cheyenne-Huron	45,802	1,223	343,571	.6	133	–	524,671	65.48
Mid-Continent Airlines, Inc.—Total	**345,980**	**15,340**	**4,641,360**	**17.6**	**6,261**	–	**6,163,205**	**75.31**
Minneapolis-New Orleans	235,944	11,030	3,371,042	14.1	5,200	–	4,521,627	74.55
Minneapolis-St. Louis-Kansas City	110,036	4,649	1,270,318	3.5	1,061	–	1,641,578	77.38
National Airlines, Inc.—Total	**508,267**	**11,830**	**5,797,677**	**19.2**	**7,511**	–	**6,639,516**	**87.32**
New York-Key West via Miami	377,942	8,902	4,341,233	11.4	4,327	–	4,912,930	88.36
Jacksonville-New Orleans	130,325	3,737	1,456,444	7.8	3,184	–	1,726,586	84.35
Northeast Airlines, Inc., New York-Caribou-Montreal; Burlington-Montreal; Bangor-Moncton—**Total**	**225,225**	**18,968**	**4,003,741**	**12.4**	**2,216**	–	**5,304,963**	**75.47**
Northwest Airlines, Inc.—Total	**1,259,005**	**30,705**	**20,673,301**	**105.6**	**66,059**	–	**24,607,361**	**84.01**
Chicago-Seattle; Fargo-Winnipeg	913,496	28,546	15,215,942	71.0	42,559	–	18,076,466	84.18
Minneapolis-Duluth	11,808	909	131,490	.6	86	–	239,184	54.97
Minneapolis-New York	333,701	7,564	5,325,869	34.0	23,414	–	6,291,711	84.65
Pennsylvania-Central Airlines Corporation—Total	**1,141,091**	**68,057**	**19,535,258**	**238.0**	**57,407**	–	**24,041,053**	**81.26**
Norfolk-Detroit	536,185	41,609	9,440,066	116.0	24,101	–	11,445,336	82.48
Detroit-Milwaukee or Chicago	300,585	24,058	5,014,308	68.0	16,060	–	6,376,428	78.64
Washington-Buffalo	47,038	2,709	774,687	6.0	1,364	–	975,309	79.43
Pittsburgh-Buffalo	17,646	1,444	276,831	4.0	566	–	366,515	75.53
Norfolk-Knoxville	42,862	1,887	521,735	2.0	585	–	884,875	58.96
New York-Birmingham	196,775	8,534	3,507,631	42.0	14,731	–	3,992,590	87.85
Transcontinental & Western Air, Inc.—Total	**2,718,803**	**45,816**	**42,231,613**	**609.0**	**281,059**	**66,553**	**46,971,500**	**89.91**
New York-Los Angeles	1,741,719	34,991	27,446,270	332.0	185,768	38,425	29,731,321	92.31
Dayton-Chicago	38,307	2,871	680,403	12.0	2,289	265	759,190	89.62
Winslow-San Francisco	213,909	7,834	2,759,758	30.0	8,509	2,071	3,503,081	78.78
New York-Chicago-Kansas City	466,031	11,659	7,307,070	172.0	70,153	23,018	7,900,864	92.48
St. Louis-Detroit via Cincinnati & Dayton	131,511	7,222	2,029,971	44.0	8,653	1,738	2,564,793	79.15
Washington-Dayton via Columbus	83,022	4,000	1,346,606	12.0	3,628	133	1,635,264	82.35
Pittsburgh-Boston	44,304	1,680	661,535	7.0	2,059	903	876,987	75.43
United Air Lines, Inc.—Total	**3,723,544**	**79,573**	**52,915,584**	**394.0**	**385,913**	–	**62,304,937**	**84.93**
New York-Oakland	2,739,309	41,098	36,132,156	285.0	315,050	–	42,956,771	84.11
Salt Lake City-Seattle	239,577	8,288	3,748,543	10.2	24,949	–	4,661,146	80.42
Seattle-San Diego	618,698	30,738	10,963,584	82.2	39,376	–	12,281,939	89.27
Denver-Cheyenne	11,616	602	58,560	.8	59	–	171,936	34.06
Seattle-Vancouver	13,974	2,047	245,644	6.1	739	–	288,018	85.29
Washington-Toledo	52,126	2,439	937,419	1.8	1,376	–	1,035,673	90.51
Cleveland-Boston	48,244	1,795	829,678	7.9	4,364	–	909,454	91.23
Western Air Lines, Inc.—Total	**597,248**	**26,193**	**9,929,917**	**69.0**	**21,112**	**2,929**	**12,532,903**	**79.23**
San Diego-Salt Lake City	277,584	12,813	4,855,417	37.5	14,489	–	5,811,580	83.55
Salt Lake City-Great Falls	73,912	3,201	1,077,713	5.2	1,055	–	1,532,601	70.32
Great Falls-Lethbridge	9,960	824	118,211	.5	62	–	199,796	59.17
Los Angeles-San Francisco	235,792	10,868	3,878,576	25.8	5,506	2,929	4,988,926	77.74
Total	**20,452,463**	**618,436**	**325,928,207**	**2,873.0**	**1,365,446**	**253,433**	**382,202,753**	**85.28**
Caribbean Atlantic Airlines, Inc., San Juan-Mayaguez & Christiansted—**Total**	**31,464**	**4,529**	**265,787**	**9.6**	**432**	**335**	**566,353**	**46.93**
Colonial Airlines, Inc., New York-Montreal—**Total**	**161,003**	**9,571**	**2,964,825**	**6.8**	**1,880**	–	**3,375,482**	**87.83**
Hawaiian Airlines, Ltd., Honolulu-Hilo & Port Allen—**Total**	**130,431**	**17,877**	**2,554,736**	**195.4**	**6,591**	**23,511**	**2,708,640**	**94.32**
Grand Total	**20,775,361**	**650,413**	**331,713,555**	**3,084.8**	**1,374,349**	**277,279**	**388,853,228**	**85.31**

[1] The total passengers carried for each airline is an unduplicated figure.

Domestic Air Carrier Statistics—Continued

Operations for February 1946

Prepared from official reports submitted by the air carriers listed, to the Civil Aeronautics Board

Operator and routes	Revenue miles flown	Revenue passengers carried [a]	Revenue passenger-miles flown	Express and freight carried (tons)	Ton-miles flown		Passenger seat-miles flown	Revenue passenger load factor (percent)
					Express	Freight		
All American Aviation, Inc., Pittsburgh-Huntington, Jamestown, Williamsport, Harrisburg, Philadelphia—**Total**	**118,404**	–	–	**2.4**	**341**	–	–	–
American Airlines, Inc.—**Total**	**4,148,051**	**124,509**	**72,950,309**	**673.0**	**239,114**	**164,867**	**82,229,259**	**88.72**
Dallas-Los Angeles	1,383,220	26,476	24,332,963	91.0	56,652	43,929	26,866,719	90.57
Boston-Cleveland; New York-Chicago	652,718	30,132	12,116,672	176.0	59,815	20,925	14,395,813	84.17
Boston-New York	249,018	29,468	4,857,271	81.0	10,256	2,178	5,700,389	85.21
Cleveland-Nashville	82,997	6,031	1,518,966	24.0	3,899	1,623	1,601,847	94.83
New York-Ft. Worth or Oklahoma City	1,140,564	31,031	19,033,139	178.0	70,780	55,958	21,104,517	90.19
Washington-Chicago	133,177	6,117	2,165,405	31.0	8,639	2,833	2,591,121	83.57
Chicago-Ft. Worth	289,306	10,319	5,205,845	44.0	11,991	11,879	5,944,004	87.58
Buffalo-Toronto	9,522	1,809	124,821	2.0	172	–	200,100	62.38
El Paso or Ft. Worth-Mexico City	207,529	3,898	3,595,227	46.0	16,910	25,542	3,824,749	94.00
Braniff Airways, Inc.—**Total**	**753,106**	**31,688**	**12,816,248**	**99.0**	**34,823**	**6,365**	**15,184,001**	**84.41**
Chicago-Dallas	366,415	12,980	6,371,896	40.6	20,052	5,357	7,359,437	86.58
Denver-Brownsville; Amarillo-Memphis	355,668	18,602	5,942,519	45.8	13,288	999	7,263,833	81.81
Houston-Nuevo Laredo or Corpus Christi	31,023	3,293	501,833	12.6	1,483	9	560,731	89.50
Chicago & Southern Air Lines, Inc.—**Total**	**515,713**	**21,002**	**8,618,150**	**69.4**	**25,937**	–	**10,760,795**	**80.09**
Chicago-New Orleans	288,159	13,548	5,043,122	40.2	15,629	–	6,037,486	83.53
Detroit-Houston	227,554	10,065	3,575,028	29.2	10,308	–	4,723,309	75.69
Continental Air Lines, Inc.—**Total**	**312,782**	**11,262**	**4,355,626**	**9.7**	**3,628**	**345**	**6,512,743**	**66.88**
Denver-El Paso-San Antonio	191,179	7,423	2,623,292	6.6	2,494	137	3,982,995	65.86
Pueblo-Tulsa	30,398	1,717	452,578	.6	184	5	636,298	71.13
Denver-Kansas City	91,205	2,770	1,279,756	2.5	950	203	1,893,450	67.59
Delta Air Corporation—**Total**	**618,969**	**27,144**	**10,768,715**	**64.0**	**30,446**	–	**13,056,024**	**82.48**
Charleston or Savannah-Ft. Worth	429,243	21,219	7,317,138	38.0	14,106	–	9,047,080	80.88
Chicago-Miami	189,726	8,007	3,451,577	26.0	16,340	–	4,008,944	86.10
Eastern Air Lines, Inc.—**Total**								
Boston-San Antonio or Brownsville								
Boston or Detroit-Miami								
Chicago-Jacksonville								
Atlanta-Miami; Tallahassee-Memphis								
Washington-St. Louis								
Essair, Inc., Houston-Amarillo—**Total**	**59,714**	**1,073**	**296,433**	**.4**	**341**	–	**537,426**	**55.16**
Inland Air Lines, Inc.—**Total**	**157,013**	**5,214**	**1,437,862**	**3.9**	**820**	–	**2,530,109**	**56.83**
Denver-Great Falls	100,597	4,505	1,128,809	3.2	675	–	1,961,269	57.56
Cheyenne-Huron	56,416	1,270	309,053	.7	145	–	568,840	54.33
Mid-Continent Airlines, Inc.—**Total**	**333,532**	**15,581**	**4,841,238**	**24.3**	**8,951**	–	**6,023,495**	**80.37**
Minneapolis-New Orleans	223,192	11,040	3,480,226	15.6	5,787	–	4,352,675	79.96
Minneapolis-St. Louis-Kansas City	110,340	4,933	1,361,012	8.7	3,164	–	1,670,820	81.46
National Airlines, Inc.—**Total**	**540,992**	**13,942**	**7,499,333**	**28.2**	**10,405**	–	**8,219,047**	**91.24**
New York-Key West via Miami	408,492	10,916	5,904,372	21.9	7,546	–	6,425,218	91.89
Jacksonville-New Orleans	132,500	4,045	1,594,961	6.3	2,859	–	1,793,829	88.91
Northeast Airlines, Inc., New York-Caribou-Montreal; Burlington-Montreal; Bangor-Moncton—**Total**	**209,543**	**18,119**	**3,735,433**	**15.0**	**2,642**	–	**4,931,520**	**75.75**
Northwest Airlines, Inc.—**Total**	**1,177,260**	**31,943**	**19,574,139**	**101.3**	**59,270**	–	**23,097,315**	**84.75**
Chicago-Seattle; Fargo-Winnipeg	862,553	29,314	14,504,404	72.0	38,061	–	17,138,184	84.63
Minneapolis-Duluth	12,384	1,071	154,224	.3	49	–	251,280	61.38
Minneapolis-New York	302,323	7,346	4,915,511	29.0	21,160	–	5,707,851	86.12
Pennsylvania-Central Airlines Corporation—**Total**	**1,090,044**	**68,167**	**19,262,962**	**206.0**	**49,565**	–	**24,168,833**	**79.70**
Norfolk-Detroit	514,065	42,587	9,631,610	103.0	21,556	–	11,854,004	81.25
Detroit-Milwaukee or Chicago	279,034	23,313	4,845,551	56.0	12,933	–	6,192,762	78.25
Washington-Buffalo	41,902	2,413	625,784	5.0	931	–	862,311	72.57
Pittsburgh-Buffalo	15,974	1,386	259,410	4.0	506	–	330,783	78.42
Norfolk-Knoxville	47,450	2,387	598,127	2.0	683	–	983,391	60.82
New York-Birmingham	191,619	8,399	3,302,480	36.0	12,956	–	3,945,582	83.70
Transcontinental & Western Air, Inc.—**Total**	**2,954,311**	**53,136**	**48,777,918**	**640.0**	**262,795**	**98,258**	**55,278,706**	**88.24**
New York-Los Angeles	1,948,083	32,393	33,287,725	331.0	175,077	62,330	37,157,055	89.59
Dayton-Chicago	36,003	2,438	634,561	9.0	1,553	640	728,591	87.09
Winslow-San Francisco	225,635	8,157	3,455,321	27.0	7,825	1,710	4,142,694	83.41
New York-Chicago-Kansas City	499,683	10,201	7,496,836	232.0	68,794	30,812	8,336,992	89.92
St. Louis-Detroit via Cincinnati & Dayton	123,173	5,154	1,967,320	30.0	5,724	1,707	2,462,235	79.90
Washington-Dayton via Columbus	76,225	3,170	1,263,391	6.0	2,309	201	1,524,863	82.85
Pittsburgh-Boston	45,509	1,718	672,764	5.0	1,513	858	926,276	72.63
United Air Lines, Inc.—**Total**	**3,517,080**	**85,762**	**52,683,112**	**407.4**	**290,378**	**123,862**	**60,800,111**	**86.65**
New York-Oakland	2,495,271	44,132	34,752,953	278.5	235,291	92,796	40,525,929	85.75
Salt Lake City-Seattle	221,864	8,155	3,486,274	35.9	21,143	3,135	4,256,935	81.90
Seattle-San Diego	666,853	34,788	12,279,778	76.5	28,468	26,442	13,430,790	91.43
Denver-Cheyenne	10,752	646	62,016	1.3	80	56	216,384	28.66
Seattle-Vancouver	16,830	2,786	339,862	3.0	657	(b)	350,136	97.07
Washington-Toledo	59,128	2,534	984,235	3.8	1,490	943	1,152,567	85.40
Cleveland-Boston	46,382	1,633	777,994	8.4	3,249	490	867,370	89.70
Western Air Lines, Inc.—**Total**	**574,993**	**28,710**	**10,379,049**	**56.0**	**18,720**	**1,442**	**14,392,509**	**72.11**
San Diego-Salt Lake City	271,089	13,321	4,622,298	29.9	10,808	–	5,980,719	77.29
Salt Lake City-Great Falls	62,818	2,851	882,195	6.2	1,242	–	1,309,670	67.36
Great Falls-Lethbridge	9,128	614	86,779	.7	85	–	181,024	47.94
Los Angeles-San Francisco	231,958	13,171	4,787,777	19.2	6,585	1,442	6,921,096	69.18
Total								
Caribbean Atlantic Airlines, Inc., San Juan-Mayaguez & Christiansted—**Total**	**28,054**	**3,624**	**221,709**	**7.6**	**330**	**261**	**396,072**	**55.98**
Colonial Airlines, Inc., New York-Montreal—**Total**	**153,982**	**8,220**	**2,494,057**	**9.7**	**1,890**	–	**3,220,622**	**77.44**
Hawaiian Airlines, Ltd., Honolulu-Hilo & Port Allen—**Total**	**112,752**	**15,412**	**2,259,351**	**161.4**	**7,361**	**17,692**	**2,457,768**	**91.93**
Grand Total								

[a] The total passengers carried for each airline is an unduplicated figure.
[b] Less than one ton-mile.

Domestic Air Carrier Statistics—Concluded

Operations for the First Two Months of 1946 as Compared with the Same Period of 1945

Operator	Revenue miles flown January–February		Revenue passengers carried (unduplicated) January–February		Revenue passenger miles flown January–February		Express and freight carried (tons) January–February	
	1946	1945	1946	1945	1946	1945	1946	1945
All American Aviation, Inc.	247,729	186,402	–	–	–	–	4.4	7.7
American Airlines, Inc.	8,603,735	6,117,103	253,452	153,961	149,926,701	93,503,095	1,499.0	2,345.4
Braniff Airways, Inc.	1,586,659	1,049,151	65,927	41,501	27,096,558	9,016,429	192.5	152.8
Chicago & Southern Air Lines, Inc.	1,047,743	614,810	41,916	19,815	17,067,772	8,820,829	141.8	145.7
Continental Air Lines, Inc.	656,414	448,093	23,178	12,406	9,038,625	4,647,315	21.1	36.7
Delta Air Corporation	1,275,122	727,086	54,756	31,745	21,937,125	12,467,330	125.0	107.0
Eastern Air Lines, Inc.	.....	3,460,664	.....	106,584	.....	56,565,505	.....	662.9
Essair, Inc.	119,845	–	1,882	–	542,492	–	.8	–
Inland Air Lines, Inc.	310,880	236,232	10,404	8,100	2,944,081	2,395,678	7.8	6.0
Mid-Continent Airlines, Inc.	679,512	390,121	30,921	12,982	9,482,598	3,413,466	41.9	31.7
National Airlines, Inc.	1,049,259	704,333	25,772	20,205	13,297,010	8,329,276	47.4	37.3
Northeast Airlines, Inc.	434,768	195,047	37,087	9,937	7,739,174	2,097,287	27.4	17.1
Northwest Airlines, Inc.	2,436,265	1,406,140	62,648	34,790	40,247,440	21,554,847	206.9	251.7
Pennsylvania-Central Airlines Corporation	2,231,135	1,118,797	136,224	72,048	38,798,220	15,052,519	444.0	571.1
Transcontinental & Western Air, Inc.	5,673,114	3,769,645	98,952	59,541	91,009,531	53,169,121	1,249.0	1,410.9
United Air Lines, Inc.	7,240,624	5,037,175	165,335	79,773	105,598,696	67,079,942	801.4	932.6
Western Air Lines, Inc.	1,172,241	699,380	54,903	26,888	20,308,966	11,412,797	125.0	107.9
Total	.....	26,160,179	.....	690,276	.....	369,525,436	.....	6,824.5
Index (1945 = 100)	.....	100.00	.....	100.00	.....	100.00	.....	100.00
Caribbean Atlantic Airlines, Inc.	59,518	33,565	8,153	3,005	487,496	217,026	17.2	23.7
Colonial Airlines, Inc.	314,985	201,786	17,791	8,614	5,458,882	2,717,132	16.5	15.3
Hawaiian Airlines, Ltd.	243,183	162,615	33,289	19,944	4,814,087	2,863,078	356.8	528.9
Grand Total	.....	26,558,145	.....	718,834	.....	375,322,672	.....	7,392.4
Index (1945 = 100)	.....	100.00	.....	100.00	.....	100.00	.....	100.00

Operator	Ton miles flown				Passenger seat-miles flown January–February		Revenue passenger load factor (percent) January–February	
	Express January–February		Freight January–February					
	1946	1945	1946	1945[a]	1946	1945	1946	1945
All American Aviation, Inc.	629	1,351	0	–	–	–	–	–
American Airlines, Inc.	466,859	1,023,926	333,152	–	167,924,509	108,730,176	89.28	86.00
Braniff Airways, Inc.	70,207	73,172	9,156	–	31,961,980	12,949,967	84.78	83.47
Chicago & Southern Air Lines, Inc.	52,032	58,971	0	–	21,844,084	12,669,761	78.13	69.62
Continental Air Lines, Inc.	7,431	16,507	1,010	–	13,555,056	6,203,489	66.68	74.91
Delta Air Corporation	59,831	40,917	0	–	26,906,256	14,866,351	81.53	83.86
Eastern Air Lines, Inc.	.....	367,070	.....	–	.....	66,275,229	.....	85.35
Essair, Inc.	443	–	0	–	1,078,605	–	50.30	–
Inland Air Lines, Inc.	1,773	1,384	0	–	4,915,315	3,792,504	59.90	63.17
Mid-Continent Airlines, Inc.	15,212	9,264	0	–	12,186,700	6,116,006	77.81	55.81
National Airlines, Inc.	17,916	14,737	0	–	14,858,563	9,208,303	89.49	90.45
Northeast Airlines, Inc.	4,858	3,101	0	–	10,236,483	4,285,698	75.60	48.94
Northwest Airlines, Inc.	125,329	135,917	0	–	47,704,676	26,864,660	84.37	80.23
Pennsylvania-Central Airlines Corporation	106,972	113,389	0	–	48,209,886	22,459,537	80.48	67.02
Transcontinental & Western Air, Inc.	543,854	714,934	164,811	–	102,250,206	63,012,173	89.01	84.38
United Air Lines, Inc.	676,291	699,862	123,862	–	123,105,048	72,017,550	85.78	93.14
Western Air Lines, Inc.	39,832	47,866	4,371	–	26,925,412	13,790,071	75.43	82.76
Total	.....	3,322,368	.....	–	.....	443,241,475	.....	83.37
Index (1945 = 100)	.....	100.00	.....	–	.....	100.00	.....	100.00
Caribbean Atlantic Airlines, Inc.	762	1,889	596	–	962,425	297,225	50.65	73.02
Colonial Airlines, Inc.	3,770	4,782	0	–	6,596,104	4,237,008	82.76	64.13
Hawaiian Airlines, Ltd.	13,952	82,504	41,203	–	5,166,408	3,022,464	93.18	94.73
Grand Total	.....	3,411,543	.....	–	.....	450,798,172	.....	83.26
Index (1945 = 100)	.....	100.00	.....	–	.....	100.00	.....	100.00

	January	February	Total
Passengers carried (unduplicated) total revenue and non-revenue:			
17 domestic airlines	629,032	.....	.....
Total airlines	661,480	.....	.....
Passenger miles flown (total revenue and non-revenue):			
17 domestic airlines	331,055,567	.....	.....
Total airlines	336,897,337	.....	.....

[a] Express and freight ton-miles combined under express. Not reported separately prior to July, 1945.

Note.—Effective January 1, 1946, all revenue traffic statistics are reported to the CAB on the basis of direct airport-to-airport distances. For purposes of comparability, those traffic statistics reported prior to that date on the basis of course-flown distances have been converted to reflect direct airport-to-airport distances.

CAB Actions

(Continued from page 48)

displayed on aircraft which fully comply with the airworthiness requirements of the Civil Air Regulations, except those rendered inapplicable by the nature of a special purpose for which the aircraft is to be used, and the airworthiness requirements not met are compensated by suitable operating restrictions imposed by the Administrator after making a finding that the aircraft, when operated for the special purpose in accordance with the restrictions placed thereon, provides a level of safety equivalent to that of an aircraft which fully meets the provisions of the airworthiness requirements of the Civil Air Regulations. NR aircraft may carry passengers and cargo but no charge shall be made for such transportation. For the purpose of this section, the materials transported for crop dusting, seeding and other specialized operations shall not be considered pay cargo.

Reg. 293–B ..... *Effective Feb. 15, 1946*

Special Civil Air Regulations Serial Numbers 293 and 293–A are hereby repealed.

Reg. 323–B ..... *Effective Mar. 1, 1946*

Route Competency Renewal—Special Civil Air Regulation Serial Number 323 is amended by striking "March 1, 1946", and inserting in lieu thereof the words "July 1, 1946."

Note: The termination date of this Regulation was previously extended to March 1, 1946, by Special Civil Air Regulation Serial Number 323–A.

Reg. 361 ..... *Effective Feb. 14, 1946*

Long Distance Domestic Scheduled Air Carrier Operations.

(a) Flights of scheduled air carriers while at altitudes in excess of 12,500 feet above sea level east of Longitude 100° west and at altitudes in excess of 14,500 feet above sea level west of Longitude 100° west need not comply with § 61.731 of the Civil Air Regulations, or any other section of Parts 40 and 61, concerning civil airways. Flights while at such altitudes need not comply with the traffic clearance requirements of § 60.252 or the right side traffic requirements of § 60.22 of the Civil Air Regulations but shall adhere to traffic control procedures specified by the Administrator.

(b) Each first pilot engaged in these operations shall be qualified for the route if he is qualified under § 40.2611(b) of the Civil Air Regulations for operations over any regular authorized route for the air carrier involved between the regular terminals for such operation.

(c) Each dispatcher who dispatches aircraft on flights authorized by this regulation shall be qualified under § 61.553 of the Civil Air Regulations for operation over an authorized route for the air carrier involved between the regular terminals of such operations: Provided, That when he is qualified only on a portion of such route he may dispatch aircraft only after coordinating the dispatch with dispatchers who are qualified for the other portions of the route between the points to be served.

(d) The weather reports used and entered on the clearance form may be more than one hour and 30 minutes old at the time of clearance as required by § 61.602(c) if the pilot is kept informed while enroute of the latest weather reports and forecasts pertinent to the flight.

This regulation shall terminate June 15, 1946.

1500 Men Designated To Handle Students' 60-day Pilot Permits

To cope with the steadily increasing number of private pilot applicants, 1500 aviation flight examiners have been authorized to issue temporary student pilot permits, by T. P. Wright, Administrator of Civil Aeronautics.

Temporary School Approval—At the same time, the Administrator also authorized the nine CAA regional offices to issue temporary approvals of flight and aviation mechanic schools, in order to expedite the processing of such applications.

These two changes, further efforts of the CAA wherever practicable to eliminate requirements which stand in the way of becoming a pilot, will give better service to the public and help to alleviate the workload of the CAA field inspectors. During 1945, they issued 74,058 student pilot permits. The rate of increase is expected to continue as good flying weather approaches.

60-day Permit—The designated flight examiner issues the temporary permit which is good for 60 days, and the permanent permit is mailed from the CAA district office.

Applications for CAA approval of flight and mechanic schools have been increasing as the current aviation boom progresses. Ordinarily, these applications are handled in Washington, but under the new rule, regional administrators will examine the applications and issue temporary approval. Later, permanent air agency certificates are mailed from Washington.

The change makes it possible for a would-be pilot to start his training on the day he applies for his permit, and for the school to advertise its approved status after brief dealings with nearby CAA offices.

Aviation Source Book Aid To Grade School Teachers

Elementary and junior high school teachers now have a valuable and comprehensive source book available for use in preparing aviation study courses for pupils in the lower grades.

The "Aviation Education Source Book", prepared at Stanford University, under sponsorship of the CAA Office of Aviation Training, presents aviation information in a form adapted to schoolroom use. It also has been recommended as a valuable guide to textbook authors and curriculum workers.

By ordering on the school letterhead, teachers may obtain the book at a discount price of $6.22, direct from the publishers, Hastings House, 67 West 44th St., New York 18, N. Y. Trade price is $12.50. This 855-page book contains more than 1,000 photographs, maps, charts and diagrams.

Board Sets Essair's Mail Pay Rate at 25 cents a Mile

The Board has set a temporary mail rate for Essair, Inc., at 25 cents per revenue mile on an airport-to-airport mileage basis, retroactive to the beginning of the carrier's mail service, Aug. 1, 1945. The proceeding is to remain open until accurate experience and operation data have been accumulated to provide a sound and reliable basis for determining a fair and reasonable final rate of pay for mail transportation.

Essair was the first of the "local" air carriers to be given a temporary certificate to see how service geared to intermediate points in a limited area would work out. Essair operates between Houston and Amarillo, Tex., via the intermediate points Austin, San Angelo, Abilene and Lubbock, on a certificate effective until September 31 of this year. The carrier must serve each intermediate point on each schedule.

New Book Presents Weather Facts in Color

weather wisdom for private pilots . . .
REALM OF FLIGHT
60c
A CIVIL AERONAUTICS ADMINISTRATION Office of Aviation Information PUBLICATION
For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

"Realm of Flight," presenting practical information about weather as it relates to the piloting of private aircraft, has just been published by the Office of Aviation Information, Civil Aeronautics Administration.

This booklet imparts "weather wisdom" for private pilots through text and multi-colored illustrations which can be understood easily without a technical knowledge of meteorology.

The 41-page publication, described as one of the handsomest ever issued by the government, makes extensive use of color in illustrations. This is done, not for decorative purpose, but as a means of making the text as clear as possible to persons who desire to become private pilots.

"Realm of Flight" now is on sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C. The price is 60 cents.

Chapters of the booklet deal with these major topics: Weather Information for the Pilot; The Nature of the Atmosphere; The Significance of Atmospheric Pressure; Wind; Moisture; Results of Condensation; and Air Masses and Fronts.

The text, by presenting basic and elementary information, also serves as a basis for further study of theoretical and technical material already available in many publications.

"Realm of Flight" is one of a series of three publications planned by the Civil Aeronautics Administration to meet the needs of the great number of Americans who intend to become active participants in the "air age."

"Path of Flight," another booklet in the series, already has been issued. It embodies a simple and practical explanation of navigation fundamentals for private pilots. It is on sale by the Superintendent of Documents for 40 cents.

The two booklets, considered radical departures in governmental publications because of their simple and graphic presentation, have an important role in promoting air safety. Since the elimination of the requirements that applicants for private-pilot certificates pass detailed examinations in navigation and meteorology, aviation authorities have been urging new pilots to make voluntary study of the elements of these two subjects.

"Realm of Flight" and "Path of Flight," it is believed, will encourage such study by making it relatively "painless." The two booklets compress into 73 pages the information on meteorology and navigation previously available to private pilots in texts totalling 597 pages of material in semi-technical and technical form.

N. Y. Air Express Increasing

Completing an unbroken record of monthly increases in air express traffic handled through New York in 1945, the Air Express Division of Railway Express Agency announces a rise of 13 percent in number of shipments handled in Dec. 1945 over the same month, 1944. A total of 101,712 shipments were handled during the month.

Air Traffic Rules Book Printed

"Air Traffic Rules" (Manual 60), October 1945 edition, is now available in printed form at the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 15 cents a copy. Attractively illustrated, this booklet explains airport and airway traffic control procedures.

☆ U. S. GOVERNMENT PRINTING OFFICE, 1946